

# LOADING MECHANISM OF RECORDING MEDIUM AND RECORDING MEDIUM DRIVE DEVICE

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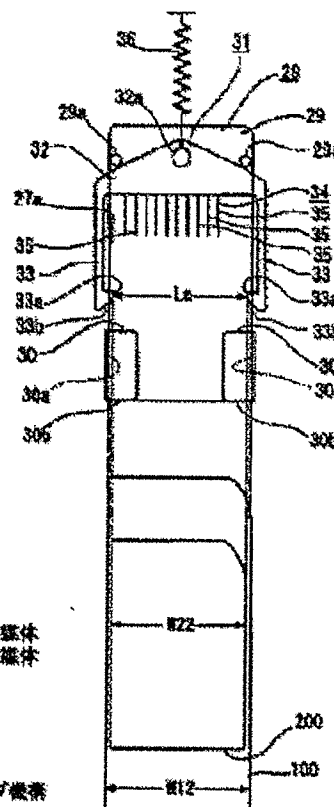
## Abstract of JP2003196606

**PROBLEM TO BE SOLVED:** To improve usability after securing the simplification of a mechanism.

**SOLUTION:** This loading mechanism of a recording medium is provided with a holder 28 for inserting the planar recording medium 100 (200) having a semiconductor memory 113 (213) and a plurality of terminal electrodes 105, 105, etc., (205, 205, etc.), and guiding the recording medium, a terminal part 34 having a plurality of connecting terminals 35, 35, etc., engaged with and connected to the plurality of terminal electrodes and having the plurality of connecting terminals movably in an approximately alignment direction of the terminal electrodes of the recording medium to be inserted in the holder, and a guide lever 31 guiding the terminal part and the recording medium in the direction of mutually engaging the connecting terminals and the terminal electrode when the recording medium is inserted in the holder.

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100...第1の記録媒体  
200...第2の記録媒体  
28...ホルダー  
31...ガイドレバー  
33...端子部  
34...端子部  
35...接続端子  
37...ローディング機構



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CLAIMS

[Claim(s)]

[Claim 1]A loading mechanism of a storage characterized by comprising the following.

An electrode holder to which a tabular storage which has semiconductor memory built in a case and two or more terminal electrodes arranged by case is inserted, and it shows this storage.

It is a movable terminal area to an abbreviated arrangement direction of a terminal electrode of a storage with which it has two or more contact buttons connected to two or more terminal electrodes of a storage by being engaged, respectively, and a contact button of this plurality is inserted in an electrode holder.

An derivation lever which derives a terminal area and a storage in the direction with which a contact button and a terminal electrode engage mutually when a storage is inserted in an electrode holder.

[Claim 2]A loading mechanism of the storage according to claim 1 characterized by making it move a terminal area to an derivation lever and one when the above-mentioned terminal area is provided in an derivation lever and a storage is inserted in an electrode holder.

[Claim 3]A loading mechanism of the storage according to claim 1 providing an derivation spring part in which elastic displacement is possible when at least one field of the fields which intersect perpendicularly with a field where it intersected [ at ] perpendicularly with the above-mentioned derivation lever among outside surfaces of a storage in the path of insertion to an electrode holder, and a terminal electrode has been arranged is touched.

[Claim 4]A loading mechanism of the storage according to claim 1 making the above-mentioned derivation lever rotatable to an electrode holder, and moving two or more contact buttons of a terminal area to an abbreviated arrangement direction of two or more terminal electrodes of a storage.

[Claim 5]A loading mechanism of the storage according to claim 1 supposing that it is movable to an arrangement direction of a terminal electrode of a storage in which the above-mentioned derivation lever is inserted by this electrode holder to an electrode holder, and moving two or more contact buttons of a terminal area to an arrangement direction of two or more terminal electrodes of a storage.

[Claim 6]When the 1st storage whose size of a case in an arrangement direction of the above-mentioned terminal electrode is the 1st size is inserted in an electrode holder, the 1st storage concerned is guided at an electrode holder, A loading mechanism of the storage according to claim 1 when the 2nd storage that is the 2nd size whose size of a case in an arrangement direction of a terminal electrode is smaller than the 1st size is inserted in an electrode holder, wherein the 2nd storage concerned is derived to an derivation lever.

[Claim 7]A flare portion of a couple which the above-mentioned derivation lever is made rotatable to an electrode holder, and is estranged on an derivation lever in an arrangement direction of a terminal electrode of a storage is provided, When the 2nd storage of the above is inserted in an electrode holder, a flare portion \*\*\*\*s to the 2nd storage concerned, it is derived between flare portions of a couple, and an derivation lever rotates to an electrode holder and two or more contact buttons of a terminal area are moved to an abbreviated arrangement

direction of two or more terminal electrodes of a storage, A loading mechanism of the storage according to claim 6, wherein each contact button of a terminal area is engaged and connected to each terminal electrode of the 2nd storage.

[Claim 8]A flare portion of a couple which it supposes that it is movable to an arrangement direction of a terminal electrode of a storage in which the above-mentioned derivation lever is inserted by this electrode holder to an electrode holder, and is estranged on an derivation lever in an arrangement direction of a terminal electrode of a storage is provided, When the 2nd storage of the above is inserted in an electrode holder, a flare portion \*\*\*\*s to the 2nd storage concerned, and it is derived between flare portions of a couple, and. An derivation lever is moved to an arrangement direction of a terminal electrode to an electrode holder, and two or more contact buttons of a terminal area are moved to an arrangement direction of two or more terminal electrodes of a storage, A loading mechanism of the storage according to claim 6, wherein each contact button of a terminal area is engaged and connected to each terminal electrode of the 2nd storage.

[Claim 9]A storage medium drive device comprising:

An electrode holder to which it is a storage medium drive device which performs writing and/or read-out of data to a tabular storage which has semiconductor memory built in a case, and two or more terminal electrodes arranged by case, and a tabular storage is inserted and it shows this storage.

It is a movable terminal area to an abbreviated arrangement direction of a terminal electrode of a storage with which it has two or more contact buttons connected to two or more terminal electrodes of a storage by being engaged, respectively, and a contact button of this plurality is inserted in an electrode holder.

An derivation lever which derives a terminal area and a storage in the direction with which a contact button and a terminal electrode engage mutually when a storage is inserted in an electrode holder.

[Claim 10]The storage medium drive device according to claim 9 characterized by making it move a terminal area to an derivation lever and one when the above-mentioned terminal area is provided in an derivation lever and a storage is inserted in an electrode holder.

[Claim 11]The storage medium drive device according to claim 9 providing an derivation spring part in which elastic displacement is possible when at least one field of the fields which intersect perpendicularly with a field where it intersected perpendicularly with the path of insertion to an electrode holder among outside surfaces of a storage, and a terminal electrode has been arranged at the above-mentioned derivation lever is touched.

[Claim 12]The storage medium drive device according to claim 9 making the above-mentioned derivation lever rotatable to an electrode holder, and moving two or more contact buttons of a terminal area to an abbreviated arrangement direction of two or more terminal electrodes of a storage.

[Claim 13]The storage medium drive device according to claim 9 supposing that it is movable to an arrangement direction of a terminal electrode of a storage in which the above-mentioned derivation lever is inserted by this electrode holder to an electrode holder, and moving two or more contact buttons of a terminal area to an arrangement direction of two or more terminal electrodes of a storage.

[Claim 14]When the 1st storage whose size of a case in an arrangement direction of the above-mentioned terminal electrode is the 1st size is inserted in an electrode holder, the 1st storage concerned is guided at an electrode holder, The storage medium drive device according to claim 9 when the 2nd storage that is the 2nd size whose size of a case in an arrangement direction of a terminal electrode is smaller than the 1st size is inserted in an electrode holder, wherein the 2nd storage concerned is derived to an derivation lever.

[Claim 15]A flare portion of a couple which the above-mentioned derivation lever is made rotatable to an electrode holder, and is estranged on an derivation lever in an arrangement direction of a terminal electrode of a storage is provided, When the 2nd storage of the above is inserted in an electrode holder, a flare portion \*\*\*\*s to the 2nd storage concerned, it is derived

between flare portions of a couple, and an derivation lever rotates to an electrode holder and two or more contact buttons of a terminal area are moved to an abbreviated arrangement direction of two or more terminal electrodes of a storage, The storage medium drive device according to claim 14, wherein each contact button of a terminal area is engaged and connected to each terminal electrode of the 2nd storage.

[Claim 16]A flare portion of a couple which it supposes that it is movable to an arrangement direction of a terminal electrode of a storage in which the above-mentioned derivation lever is inserted by this electrode holder to an electrode holder, and is estranged on an derivation lever in an arrangement direction of a terminal electrode of a storage is provided, When the 2nd storage of the above is inserted in an electrode holder, a flare portion \*\*\*\*\* to the 2nd storage concerned, and it is derived between flare portions of a couple, and. An derivation lever is moved to an arrangement direction of a terminal electrode to an electrode holder, and two or more contact buttons of a terminal area are moved to an arrangement direction of two or more terminal electrodes of a storage, The storage medium drive device according to claim 14, wherein each contact button of a terminal area is engaged and connected to each terminal electrode of the 2nd storage.

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DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Field of the Invention]This invention relates to the loading mechanism and storage medium drive device of a storage. It is related with the technical field about the storage medium drive device provided with the loading mechanism which carries out loading of the tabular storage which has semiconductor memory and two or more terminal electrodes in detail, and this loading mechanism.

[0002]

[Description of the Prior Art]The tabular storage which has semiconductor memory and two or more terminal electrodes is inserted in a slot, a storage applied part is equipped, there is a storage medium drive device which performs the writing and/or read-out of data to the storage concerned, and the thing of various sizes is provided as a tabular storage now.

[0003]Although such some storages have a common terminal electrode which it is inserted in the slot of the same storage medium drive device, and can perform writing and/or read-out of data, Since a size changes with differences between length, width, and thickness, respectively, a storage with a small size is equipped with an adapter, and it inserts in a slot, and enables it to use any storage which has a common terminal electrode as a means to share a slot.

[0004]

[Problem(s) to be Solved by the Invention]However, in the above which attained sharing of the slot using the adapter, when trying to write data to a storage with a small size, there is a problem that an adapter needs to be equipped and it is user-unfriendly each time.

[0005]On the other hand, in order to attain sharing of a slot, the contact button connected to the terminal electrode of a storage is fixed in the inside of a slot, Although providing two or more guides for every storage from which a size differs inside a slot, detecting whether the storage inserted in the slot is which thing, and changing a guide according to the detection result concerned is also taken into consideration, With such composition, a mechanism will become complicated and increase of the manufacturing cost of a storage medium drive device will be caused.

[0006]Then, the loading mechanism and storage medium drive device of this invention storage make it a technical problem to aim at improvement in user-friendliness, after securing the simplification of a mechanism.

[0007]

[Means for Solving the Problem]A loading mechanism and a storage medium drive device of this invention storage, An electrode holder to which a tabular storage which has semiconductor memory built in a case and two or more terminal electrodes arranged by case is inserted in order to solve the above-mentioned technical problem, and it shows this storage, Have two or more contact buttons connected to two or more terminal electrodes of a storage by being engaged, respectively, and a contact button of this plurality to an abbreviated arrangement direction of a terminal electrode of a storage inserted in an electrode holder A movable terminal area, When a storage is inserted in an electrode holder, a contact button and a terminal electrode provide an derivation lever which derives a terminal area and a storage in the direction engaged mutually.

[0008]Therefore, if it is in a loading mechanism and a storage medium drive device of this invention storage, when a storage is inserted in an electrode holder, a contact button of a terminal area is derived in the direction close to a terminal electrode of a storage.

[0009]

[Embodiment of the Invention]Below, the loading mechanism of this invention storage and the embodiment of a storage medium drive device are described according to an accompanying drawing.

[0010]First, the tabular storage with which it is inserted in the slot of a storage medium drive device, and reading and writing of data are performed is explained (refer to drawing 1 thru/or drawing 5).

[0011]Two kinds of 1st tabular storage 100 that differs in a size, and the 2nd tabular storage 200 are used for the storage medium drive device concerned (refer to drawing 1 and drawing 2).

[0012]The 1st storage 100 succeeds in approximately rectangular shape, for example, the length W11 shall set width W12 to 50 mm, it shall be 21.5 mm, and the thickness W13 is 2.8 mm (refer to drawing 1).

[0013]Semiconductor memory, such as a flash memory, is built in the case 101, and, as for the case 101, the 1st storage 100 has the 1st principal surface 101a that has the greatest area, and the 2nd principal surface that are fields of the opposite hand of this 1st principal surface 101a and that is not illustrated.

[0014]The polar zone 102 is formed in the end part in the longitudinal direction (cross direction) of the 1st principal surface 101a. The ten crevices 104 and 104 for connection and ... are formed in the polar zone 102 of two or more bridge walls 103 and 103 which estranged in the direction of the shorter side of the 1st principal surface 101a (longitudinal direction), and were established at equal intervals, and ... the crevices 104 and 104 for connection and ... can be set to the longitudinal direction of the 1st principal surface 101a — on the other hand (back) — and it can set to the thickness direction (sliding direction) of the 1st storage 100 — an opening being carried out on the other hand (upper part), and, The terminal electrodes 105 and 105 and ... are arranged at the crevices 104 and 104 for connection, and ..., respectively.

[0015]The portion which adjoins the polar zone 102 of the 1st storage 100 is provided in the upper part as the notch 106 by which the opening was carried out, and the rim of this notch 106 is formed as the chamfer 107 which succeeds in an approximate circle arc.

[0016]When the 1st storage 100 is inserted in the slot which a storage medium drive device mentions later in the regular state, the notch 106 and the chamfer 107 serve as escape over the erroneous insertion prevention parts provided in the inside of a slot, and a slot is inserted and equipped with the 1st storage 100. On the other hand, when the 1st storage 100 is inserted in a slot from the opposite hand in back return or a longitudinal direction, The corner in which the notch 106 and the chamfer 107 of the case 101 are not formed is contacted by erroneous insertion prevention parts, insertion into the slot of the 1st storage 100 is regulated, and erroneous insertion is prevented.

[0017]The incorrect record prevention tab 108 is formed near the polar zone 102 of the 1st principal surface 101a, enabling a free slide. In the state where it was made to slide to one side, the incorrect record prevention tab 108 enables the writing of the data to semiconductor memory, and has a function which makes the writing of the data to semiconductor memory impossible in the state where it was made to slide to another side.

[0018]The crevice 109 for omission prevention is formed in the side of the incorrect record prevention tab 108 at the case 101. The crevice 109 for omission prevention plays the role which prevents omission of the 1st storage 100, when the 1st storage 100 is inserted in a slot, and the drop prevention part provided in the inside of a slot is engaged.

[0019]The engaging recess 110 is formed in the side edge of the side and opposite hand in which the crevice 109 for omission prevention of the 1st principal surface 101a was formed, and this engaging recess 110 is formed in the approximately center part in the longitudinal direction of the 1st storage 100. The engaging recess 110 plays the role which detects that the 1st storage 100 was inserted in the slot in the regular state, when the engagement protruding part provided in the inside of a slot is engaged.

[0020]The engagement groove 111 by which the opening was carried out to back at the position of the side of the polar zone 102 is formed in the near side 101b in which the engaging recess 110 of the case 101 was formed. The engagement piece which was provided in the inside of a slot and which is mentioned later engages with the engagement groove 111.

[0021]It succeeds in approximately rectangular shape, for example, the length W21 shall set width W22 to 31 mm, it shall be 20 mm, the thickness W23 shall be 1.6 mm, and the 2nd storage 200 is formed smaller than the 1st storage 100 (refer to drawing 2).

[0022]Except for the part, the polar zone 102 of the 1st storage 100 and the common polar zone 202 are formed in the 1st principal surface 201a, and the 2nd storage 200 is made the same as the bridge walls 103 and 103 of the 1st storage 100, and the pitch of ... by the bridge walls 203 and 203 and the pitch of ...

[0023]The 2nd storage 200 has the same each part as the 1st storage 100, The terminal electrodes 205 and 205 and ... are arranged at the crevices 204 and 204 for connection, and ..., respectively, and it has the notch 206, the chamfer 207, the incorrect record prevention tab 208, the crevice 209 for omission prevention, and the engaging recess 210 in the case 202. The engagement groove equivalent to the engagement groove 111 formed in the 1st storage 100 is not formed in the 2nd storage 200.

[0024]The 2nd storage 200 is made the same as width [ in / in the width in the longitudinal direction of the polar zone 202 / the longitudinal direction of the polar zone 102 of the 1st storage 100 ], The distance D21 from the right end of the terminal electrode 205 in the rightmost side of the 2nd storage 200 to the right lateral 201b of the case 201, It is more slightly [ than the distance D11 from the right end of the terminal electrode 105 in the rightmost side of the 1st storage 100 to the right lateral 101b of the case 101 ] small, The distance D22 from the left end of the terminal electrode 205 in the leftmost side of the 2nd storage 200 to the left lateral 201b of the case 201, It is slightly made smaller than the distance D12 from the left end of the terminal electrode 105 in the leftmost side of the 1st storage 100 to the left lateral 101b of the case 101 (refer to drawing 1 and drawing 2).

[0025]Next, the terminal electrodes 105 and 105 of the 1st storage 100, ... and the terminal electrodes 205 and 205 of the 2nd storage 200, and the electrode structure of ... are explained (refer to drawing 3). The terminal electrodes 105 and 105, ... and the terminal electrodes 205 and 205, and the electrode structure of ... are the same.

[0026]As for each of the terminal electrodes 105 and 105, ... and terminal electrodes 205 and 205, and ..., ten flat electrodes (terminals T1 thru/or T10) are arranged at the single tier.

[0027]The terminal T1 and the terminal T10 are detection voltage VSS terminals. The terminal T2 is an input terminal of serial protocol bus state signal BS. Terminal T3 and the terminal T9 are terminals of a power-supply-voltage V storage. The terminal T4 is an input/output terminal of a serial protocol-data signal. The terminal T5 and the terminal T7 are reserve terminals. The terminals T6 are the detection terminals for detection of the 1st storage 100 and the 2nd storage 200. The terminal T8 is an input terminal of the serial clock SCLK.

[0028]Next, a relation with the internal structure of the terminals T1 thru/or T10, the 1st storage 100, and the 2nd storage 200 is explained (refer to drawing 4). The internal structure of the 1st storage 100 and the 2nd storage 200 is the same.

[0029]Inside the cases 101 and 201, control ICs 112 and 212 and the semiconductor memory 113 and 213 are arranged, respectively.

[0030]Control ICs 112 and 212 have the function to write the data to the semiconductor memory 113 and 213. Control ICs 112 and 212 are connected with the terminal T2, the terminal T4, and the terminal T8, serial protocol bus state signal BS is inputted from the terminal T2, and the serial clock SCLK is inputted from the terminal T8.

[0031]At the time of write operation, the writing of the data inputted from the terminal T4 to the semiconductor memory 113 and 213 is performed based on the serial clock SCLK inputted from serial protocol bus state signal BS and the terminal T8 which are inputted from the terminal T2.

[0032]At the time of reading operation, based on serial protocol bus state signal BS and the serial clock SCLK, read-out of the data from the semiconductor memory 113 and 213 is performed, and the data read via the terminal T4 is outputted to a storage medium drive device.

[0033]Detection voltage VSS is inputted into the terminal T6, the voltage of the terminal T6 is detected by the resistance R in a storage medium drive device, and detection of whether the 1st storage 100 or 2nd storage 200 is inserted in the slot of a storage medium drive device is performed.

[0034]Control ICs 112 and 212 have the memory controllers 112a and 212a, the registers 112b and 212b, the page buffers 112c and 212c, and the serial interface 112d and 212d, respectively (refer to drawing 5).

[0035]The memory controllers 112a and 212a transmit the data between the semiconductor memory 113 and 213 and the page buffers 112c and 212c based on the parameter set as the registers 112b and 212b. The data by which the buffer ring was carried out to the page buffers 112c and 212c, The buffer ring of the data which was transmitted to the storage medium drive device via the serial interface 112d and 212d, and was transmitted from the storage medium drive device is carried out to the page buffers 112c and 212c via the serial interface 112d and 212d.

[0036]Next, the storage medium drive device which write data to the 1st storage 100 and 2nd storage 200 is explained (refer to drawing 5 thru/or drawing 7).

[0037]The storage medium drive device 1 receives the 1st storage 100 and 2nd storage 200, For example, various kinds of data of a video data, still picture data, voice data, HiFi data (music data), the data for computers, the data for control, etc. can be written, and necessary each part is arranged and it grows into the inside of the outer case 2.

[0038]The indicator 3 formed with the liquid crystal panel is formed in the front face 2a of the outer case 2 (refer to drawing 6), and the information about a picture, a character, and the sound and music that were played by this indicator 3 and that are played, an operation guidance message, etc. are displayed on it.

[0039]The slot 4 in which the 1st storage 100 and 2nd storage 200 are inserted is formed in the front face 2a.

[0040]By providing two or more operation keys 5 and 5 and ... in the front face 2a, and operating these operation keys 5 and 5 and ... in it, For example, stop of turning on and off of a power supply, record and reproduction of data, recording operation, reproduction motion, etc., and the rapid traverse and the operation of various kinds already, such as return, change of volume, edit of data, selection of a menu, and setting out of operational mode, at the time of reproduction can be performed.

[0041]The connection terminals 6 and 6 with various kinds of apparatus and ... are provided in the lower end part of the front face 2a. As the connection terminals 6 and 6 and ..., they are the head telephone terminal 6a, the line-out terminal 6b, the mike input terminal 6c, the line-in terminal 6d, the digital input terminal 6e, the USB (Universal Serial Bus) terminal 6f, etc., for example.

[0042]Electric power is supplied to the storage medium drive device 1 via the power receptacle 7 from commercial alternating current power, for example.

[0043]As an interface structure to the 1st storage 100 and 2nd storage 200, the file manager 8, the transmission protocol interface 9, and the serial interface 10 are formed in the storage medium drive device 1 (refer to drawing 5).

[0044]The file manager 8 has the function to manage the 1st storage 100 and 2nd storage 200, and access to the 1st storage 100 and 2nd storage 200 is performed based on instructions of the file manager 8.

[0045]The transmission protocol interface 9 performs access to the registers 112b and 212b and the page buffers 112c and 212c of the 1st storage 100 and the 2nd storage 200.

[0046]When the 1st storage 100 and 2nd storage 200 are inserted in the slot 4, the serial interface 10, The protocol for performing arbitrary data transfer in a serial clock (SCLK), a bus state (BS), and serial data (SDIO) is specified, Data is delivered and received between the serial interface 112d and 212d of the 1st storage 100 or the 2nd storage 200.

[0047]Next, the circuitry provided in the storage medium drive device 1 is explained (refer to drawing 7).

[0048]CPU(Central Processing Unit) 11 functions as a central controlling part of the storage



medium drive device 1, and performs motion control of the following each part.

[0049]CPU11 has ROM(ReadOnly Memory)11a and RAM(Random Access Memory)11b as a work region which memorized an operation program and various kinds of constants, for example.

CPU11 performs the control action specified by an operation program based on the above-mentioned operation keys 5 and 5 and the command signal inputted by the operation to ...

[0050]CPU11 makes the flash memory 12 memorize the system construction information about operation of various kinds of mode setting, such as a music recording mode and a display mode, etc. CPU11 can store data in the buffer memory 13 formed of D-RAM etc. on the occasions, such as reading-and-writing operation to the 1st storage 100 and 2nd storage 200, temporarily, for example.

[0051]The real-time clock 14 has the function to calculate a present date. CPU11 checks a present date with the date data from the real-time clock 14.

[0052]USB interface 15 is a communication interface between the external instruments connected to above-mentioned USB terminal 6f provided in the outer case 2. CPU11 can perform data communications via USB interface 15 between the personal computers etc. which are external instruments. For example, transmission and reception of control data, computer data, image data, audio information, etc. are performed.

[0053]As a power supply section, it has the regulator 16 and DC-DC converter 17. When CPU11 considers it as a power turn, it sends out the command signal of a power turn to the regulator 16. The regulator 16 performs rectification/smoothness of the volts alternating current supplied via the power receptacle 7 based on the command signal from CPU11. The power supply voltage from the regulator 16 is transformed into a necessary pressure value in DC-DC converter 17, and is supplied to each part as that of an operation power voltage V storage.

[0054]Access of CPU11 to the 1st storage 100 and 2nd storage 200 is attained via the memory interface 18, and execution of record of various kinds of data, reproduction, edit, etc. of it is enabled.

[0055]CPU11 displays a necessary picture on the indicator 3 provided in the outer case 2 by controlling the display driver 19.

[0056]As an audio signal processor to the connection terminals 6 and 6 provided in the outer case 2, ... 6a, i.e., a head telephone terminal, the line-out terminal 6b, the mike input terminal 6c, the line-in terminal 6d, and the digital input terminal 6e, SAM (Security Application.) Module: Encryption / development processing part 20, DSP(Digital Signal Processor) 21, the analog-to-digital converter 22, the power amplification 23, the microphone amplifier 24, the optical input module 25, and the digital input part 26 are formed.

[0057]SAM20 delivers and receives a cryptographic key between CPU11 while performing encryption and decryption (decoding) of data between CPU11 and DSP21. The cryptographic key is memorized by the flash memory 12, for example. SAM20 can perform encryption and decryption using a cryptographic key. The encryption and decryption by SAM20 are performed according to instructions of CPU11, when receiving the time of, for example, transmitting data to the personal computer etc. which are external instruments via USB interface 15, and data.

[0058]DSP21 performs compression processing and elongation processing of audio information based on instructions of CPU11.

[0059]The analog-to-digital converter 22 performs an A/D conversion and D/A conversion about an audio signal.

[0060]The digital input part 26 performs input interface processing of the digital audio data incorporated with the optical input module 25.

[0061]In the storage medium drive device 1, input and output of an audio signal are performed as follows.

[0062]The signal inputted into the digital input terminal 6e via the optical cable from the external instrument, for example, a disk player etc., as digital audio data, With the optical input module 25, photoelectric conversion is carried out, it is incorporated, and reception according to a transmit format is performed by the digital input part 26. Compression processing is carried out by DSP21, and the digital audio data by which reception was carried out are supplied to CPU11, and let them be record data to the 1st storage 100 and 2nd storage 200.

[0063]When a microphone is connected to the mike input terminal 6c, after the input voice signal is amplified by the microphone amplifier 24, an A/D conversion is carried out by the analog-to-digital converter 22, and DSP21 is supplied as digital audio data. The supplied data is supplied to CPU11 via the compression processing in DSP21, and let it be record data to the 1st storage 100 or 2nd storage 200.

[0064]The A/D conversion of the input voice signal from the external instrument connected to the line-in terminal 6d is carried out by the analog-to-digital converter 22, and it is supplied to DSP21 as digital audio data. The supplied data is supplied to CPU11 via the compression processing in DSP21, and let it be record data to the 1st storage 100 or 2nd storage 200.

[0065]On the other hand, when outputting the audio information read from the 1st storage 100 or 2nd storage 200, based on instructions of CPU11, elongation processing is performed by DSP21 about the audio information concerned. The digital audio data in which the expansion process was performed are changed into an analog audio signal by the analog-to-digital converter 22, and are supplied to the power amplification 23. In the power amplification 23, amplification processing for head telephones and amplification processing for line-out are performed, and the head telephone terminal 6a and the line-out terminal 6b are supplied, respectively.

[0066]Next, the internal structure of the slot 4 formed in the outer case 2 is explained (refer to drawing 8 thru/or drawing 11).

[0067]The inside of the slot 4 of the storage medium drive device 1 is formed as the storage applied part 27 equipped with the 1st storage 100 or 2nd storage 200 (refer to drawing 8). The engagement piece 27a which is inserted in the engagement groove 111 of the 1st storage, and is engaged is formed in the storage applied part 27.

[0068]The electrode holder 28 is arranged at the storage applied part 27. The base part 29 which succeeds in plate-like [longwise], and the guide parts 30 and 30 provided in the edges on both sides of the front end part of this base part 29 are formed in one, and the electrode holder 28 changes (refer to drawing 8 and drawing 9). The guide parts 30 and 30 comprise the guide wall parts 30a and 30a vertically projected from the base part 29, and the presser-foot walls 30b and 30b projected in the direction which approaches mutually from the tip edge of these guide wall parts 30a and 30a, respectively.

[0069]It estranges right and left and the restriction projection 29a and 29a is formed in the rear end part of the base part 29.

[0070]the guide wall part 30a of the guide parts 30 and 30, and the interval between 30a -- the width W12 of the 1st storage 100 -- abbreviated -- it enlarges slightly whether it is the same (refer to drawing 9), and the interval of the presser-foot walls 30b and 30b and the base part 29 is slightly enlarged from the thickness W13 of the 1st storage 100.

[0071]The derivation lever 31 is supported by the rear end part of the base part 29 of the electrode holder 28, enabling free rotation (refer to drawing 8 thru/or drawing 10). The derivation spring parts 33 and 33 projected to the abbreviated front are formed in one, and the derivation lever 31 comprises the both-the-right-and-left-ends part of the base 32 and this base 32.

[0072]The rotating shaft part 32a is formed in the center section in the longitudinal direction of the base 32, and the derivation lever 31 is supported by the base part 29 of the electrode holder 28 via this rotating shaft part 32a, enabling free rotation.

[0073]The derivation projected parts 33a and 33a projected in the direction which approaches mutually, respectively are formed in the tip part of the derivation spring parts 33 and 33. The inclined planes 33b and 33b displaced in the direction which approaches mutually are formed in the derivation projected parts 33a and 33a as it goes back.

[0074]Elastic displacement of the derivation spring parts 33 and 33 to the direction in which the derivation projected parts 33a and 33a move to an abbreviated longitudinal direction is enabled to the base 32.

[0075]shortest distance [ lever / 31 / derivation ] La (refer to drawing 9) between the derivation projected part 33a and 33a -- the width W23 of the 2nd storage 200 -- abbreviated -- it is made the same. Therefore, when the 2nd storage 200 is inserted in the electrode holder 28, the sides 201b and 201b of the 2nd storage 200 contact or approach the derivation projected parts

33a and 33a of the derivation spring parts 33 and 33.

[0076]The terminal area 34 is formed in the front face of the base 32, and this terminal area 34 is constituted by the ten contact buttons 35 and 35 and ... The contact buttons 35 and 35 and ... are estranged and provided in a longitudinal direction at equal intervals, and the pitch is made the same as the pitch of the terminal electrodes 105 and 105 of the 1st storage 100 and the 2nd storage 200, ..., 205 and 205, and ... The contact buttons 35 and 35 and width in the longitudinal direction of ... are made smaller than the terminal electrodes 105 and 105, ..., 205 and 205, and the width in the longitudinal direction of ...

[0077]Elastic displacement of the contact button 35 is enabled to the base 32, and it comprises the base end 35a projected from the base 32, and the contact part 35b which are turned up from the tip of this base end 35a, inclines to the base end 35a, sees from the side, and succeeds in the shape of a V character (refer to drawing 10). Elastic displacement of the contact part 35b is enabled to the base end 35a.

[0078]The ten contact buttons 35 and 35 and the terminal area 34 constituted by ... are connected to the memory interface 18 (refer to drawing 7).

[0079]In the state where external force is not given, the derivation lever 31 is held with the spring 36 for neutrality in the center valve position to the electrode holder 28, i.e., the center in rotating extent, (refer to drawing 9).

[0080]As for the derivation lever 31, the rotation more than needed is regulated by the restriction projection 29a and 29a by which the base 32 was established in the base part 29 of the electrode holder 28. Therefore, in the rotating extent of the derivation lever 31, the front end P and P of the inclined planes 33b and 33b of the derivation projected parts 33a and 33a is not located inside the inner surfaces Q and Q of the guide wall parts 30a and 30a of the electrode holder 28, and is made (refer to drawing 11).

[0081]The loading mechanism 37 which carries out loading of the 1st storage 100 and 2nd storage 200 to the storage applied part 27 is constituted by the electrode holder 28, the derivation lever 31, and the terminal area 34 which were constituted as mentioned above.

[0082]Below, the loading operation of the loading mechanism 37 is explained (refer to drawing 12 thru/or drawing 21). The 1st storage 100 and 2nd storage 200 are inserted in the slot 4 by each from the polar-zone 102 and 202 side.

[0083]First, operation when the 1st storage 100 is inserted in the slot 4 of the outer case 2 is explained (refer to drawing 12 thru/or drawing 14).

[0084]If the 1st storage 100 is inserted in the slot 4, the sides 101b and 101b of the 1st storage 100 are shown at the guide wall parts 30a and 30a of the guide part 30 of the electrode holder 28, and are moved back (refer to drawing 12).

[0085]The inclined planes 33b and 33b of the derivation spring parts 33 and 33 of the derivation lever 31 \*\*\*\* to the 1st storage 100 moved back (refer to drawing 13). Since width W12 of the 1st storage 100 is made larger than the derivation projected part 33a and shortest distance La between 33a, elastic displacement of it is carried out in the direction which the derivation spring parts 33 and 33 estrange mutually with movement behind the 1st storage 100 (refer to drawing 14).

[0086]The 1st storage 100 is inserted between the derivation spring parts 33 and 33, and the terminal electrodes 105 and 105 and ... are connected to the contact buttons 35 and 35 and ... which are awaited, respectively (refer to drawing 14). The connected state in which the contact parts 35b and 35b and ... contact the terminal electrodes 105 and 105 and ... elastically and in which both contact buttons 35 and 35 and ... are positive since elastic displacement is possible is secured. The engagement piece 27a is engaging with the engagement groove 111 of the 1st storage 100 in the contact buttons 35 and 35 and the state where the terminal electrodes 105 and 105 and ... were connected to ..., respectively (refer to drawing 14).

[0087]By, for example, operating ejection \*\* which was provided in the outer case 2 and which is not illustrated, extraction from the slot 4 of the 1st storage 100 is performed, when the 1st storage 100 is discharged from the slot 4 by the ejecting mechanism which was established in the slot 4 and which is not illustrated. If the 1st storage 100 is taken out from the slot 4, the displaced derivation spring parts 33 and 33 will carry out elastic restoration, and will return to

the original state.

[0088]Next, operation when the 2nd storage 200 is inserted in the slot 4 of the outer case 2 is explained (refer to drawing 15 thru/or drawing 21).

[0089]For example, if it is inserted in this slot 4 after the 2nd storage 200 has approached the left to the slot 4, the inclined plane 33b of the derivation spring part 33 on the left-hand side of the derivation lever 31 will \*\*\*\* to the 2nd storage 200 (refer to drawing 15).

[0090]The inclined plane 33b \*\*\*\*s, it is moved back, and the 2nd storage 200 rotates in the 31Rderivation lever 1 direction by the thrust to the inclined plane 33b of the 2nd storage 200 at this time (refer to drawing 16). Therefore, it is displaced in the contact buttons 35 and 35 and ... at the left side.

[0091]The 2nd storage 200 is inserted between the derivation spring parts 33 and 33, and the terminal electrodes 205 and 205 and ... are connected to the contact buttons 35 and 35 and ... which the rotation to 31Rderivation lever 1 direction is displaced at the left side, and are awaited, respectively (refer to drawing 17). The connected state in which the contact parts 35b and 35b and ... contact the terminal electrodes 205 and 205 and ... elastically and in which both contact buttons 35 and 35 and ... are positive since elastic displacement is possible is secured.

[0092]When the 1st storage 100 and 2nd storage 200 are inserted in the electrode holder 28, The position in the terminal electrodes 105 and 105 in the electrode holder 28, ... and the terminal electrodes 205 and 205, and a sliding direction with ... changes with both thickness W13 and differences in W23, Although the terminal electrodes 205 and 205 and ... are estranged below to the contact button 35 as compared with the terminal electrodes 105 and 105 and ..., This difference is absorbed by the amount of elastic displacement of the contact button 35, and the contact buttons 35 and 35 and ... are certainly connected also to any of the terminal electrodes 105 and 105, ... and the terminal electrodes 205 and 205, and ...

[0093]In the terminal electrodes 205 and 205 of the 2nd storage 200, and the state where ... was connected to the contact buttons 35 and 35 and ..., and the storage applied part 27 was equipped with the 2nd storage 200, the derivation lever 28 is held with the spring 36 for neutrality in a center valve position (refer to drawing 18). In the contact buttons 35 and 35 and the state where the terminal electrodes 205 and 205 and ... were connected to ..., respectively, it changes into the state where the left lateral 201b of the 2nd storage 200 touched the engagement piece 27a.

[0094]Like the case of the 1st storage 100, extraction from the slot 4 of the 2nd storage 200 is performed, when discharged by the ejecting mechanism from the slot 4.

[0095]On the other hand, if it is inserted in this slot 4 after the 2nd storage 200 has visited the right direction to the slot 4, the inclined plane 33b of the derivation spring part 33 on the right-hand side of the derivation lever 31 will \*\*\*\* to the 2nd storage 200 (refer to drawing 19).

[0096]The inclined plane 33b \*\*\*\*s to the 2nd storage 200, it is moved back, and the electrode holder 28 rotates to R 2-way by the thrust to the inclined plane 33b of the 2nd storage 200 at this time (refer to drawing 20). Therefore, it is displaced in the contact buttons 35 and 35 and ... at the right direction side.

[0097]The 2nd storage 200 is inserted between the derivation spring parts 33 and 33, and the terminal electrodes 105 and 105 and ... are connected to the contact buttons 35 and 35 and ... which the rotation to R 2-way of the derivation lever 31 is displaced at the right direction side, and are awaited, respectively (refer to drawing 21). The connected state in which the contact parts 35b and 35b and ... contact the terminal electrodes 205 and 205 and ... elastically and in which both contact buttons 35 and 35 and ... are positive since elastic displacement is possible is secured.

[0098]In the terminal electrodes 205 and 205 of the 2nd storage 200, and the state where ... was connected to the contact buttons 35 and 35 and ..., and the storage applied part 27 was equipped with the 2nd storage 200, the derivation lever 28 is held with the spring 36 for neutrality in a center valve position. In the contact buttons 35 and 35 and the state where the terminal electrodes 205 and 205 and ... were connected to ..., respectively, it changes into the state where the left lateral 201b of the 2nd storage 200 touched the engagement piece 27a.

[0099]Like the case of the 1st storage 100, extraction from the slot 4 of the 2nd storage 200 is

performed, when discharged by the ejecting mechanism from the slot 4.

[0100]If it is in the storage medium drive device 1 as indicated above, Since the terminal area 34 and the 2nd storage 200 are derived in the direction with which the contact buttons 35 and 35, ..., the terminal electrodes 205 and 205 and ... engage mutually by the derivation lever 31 when the 2nd storage 200 is inserted in the electrode holder 28, The storage applied part 27 can be equipped with the both sides of the 1st storage 100 and the 2nd storage 200, without using an adapter, and improvement in the user-friendliness by sharing of the slot 4 can be aimed at.

[0101]Since the detection means for detecting the difference in the size of the storage inserted in the slot 4 is not needed and the 1st storage 100 and the guide for every 2nd storage 200 are not needed, either, reduction of the manufacturing cost of the storage medium drive device 1 by the simplification of a mechanism can be aimed at.

[0102]If it is in the storage medium drive device 1, in order to form the terminal area 34 in the derivation lever 31 and to try to move the terminal area 34 to the derivation lever 31 and one, The link mechanism for operating the terminal area 34 with operation of the derivation lever 31 is unnecessary, and reduction of part mark can be aimed at, and improvement in reliability of operation can be aimed at.

[0103]Since the derivation spring parts 33 and 33 in which elastic displacement is possible are formed in the derivation lever 31, the terminal electrodes 105 and 105 and ... can derive the 1st storage 100 in the contact buttons 35 and 35 and the direction connected to ... certainly.

[0104]Since sharing of the slot 4 can be attained only by making the derivation lever 31 rotatable at the electrode holder 28, simplification of a mechanism can be attained.

[0105]Since the 1st storage 100 is guided at the electrode holder 28, the storage applied part 27 is equipped with it further again, the 2nd storage 200 is derived to the derivation lever 31 and the storage applied part 27 is equipped with it, The storage applied part 27 can be equipped with each of the 1st storage 100 and the 2nd storage 200 properly and certainly.

[0106]In addition, since it is certainly derived to one of the derivation spring parts 33 even if it is inserted in the slot 4, where which [ on either side ] side is approached the 2nd storage 200, it can connect certainly the contact buttons 35 and 35, ..., the terminal electrodes 205 and 205 and ...

[0107]Although the case where formed the spring 36 for neutrality and the derivation lever 31 was held in a center valve position above was shown, If it is in the loading mechanism 37, in the rotating extent of the derivation lever 31, as mentioned above The inclined plane 33b, Since the front end P and P of 33b is not located inside the inner surfaces Q and Q of the guide wall parts 30a and 30a of the electrode holder 28 and is made (refer to drawing 11), Since the 1st storage 100 and 2nd storage 200 are always inserted between the derivation spring parts 33 and 33, it is not necessary to necessarily form the spring 36 for neutrality.

[0108]Next, the electrode holder 28, the electrode holder 28A which is the 1st modification of the derivation lever 31, and the derivation lever 31A are explained (refer to drawing 22 thru/or drawing 27). Since, as for the 1st modification shown below, it is only different that the derivation lever 31A is supported by the electrode holder 28A, enabling free movement to a longitudinal direction as compared with the electrode holder 28 and the derivation lever 31, Only a different portion as compared with the electrode holder 28 and the derivation lever 31 is explained to details, the same numerals as the numerals given to the same portion in the electrode holder 28 and the derivation lever 31 about other portions are attached, and explanation is omitted.

[0109]It estranges right and left and the holding pins 28a and 28a are formed in the position of back end slippage of the electrode holder 28A (refer to drawing 22). The restriction projection 29a and 29a provided in the above-mentioned electrode holder 28 is not formed in the electrode holder 28A.

[0110]The derivation spring parts 33 and 33 projected to the abbreviated front are formed in one, and the derivation lever 31A comprises the both-the-right-and-left-ends part of the base 32A and this base 32A. In the base 32A, estrange at right and left, and the long supported holes 32b and 32b are formed in a longitudinal direction, The holding pins 28a and 28a of the electrode holder 28A are inserted in these supported holes 32b and 32b, and the derivation lever 31A is supported by the electrode holder 28A, enabling free movement to a longitudinal direction, i.e.,

the S1-S 2-way shown in drawing 22, (refer to drawing 22). The ten contact buttons 35 and 35 and the terminal area 34 which comprises ... are formed in the front face of the base 32A.

[0111]The loading mechanism 38 which carries out loading of the 1st storage 100 and 2nd storage 200 is constituted by the electrode holder 28A, the derivation lever 31A, and the terminal area 34 which were constituted as mentioned above.

[0112]Below, the loading operation of the loading mechanism 38 is explained (refer to drawing 23 thru/or drawing 27).

[0113]Like [ when the 1st storage 100 is inserted in the slot 4 of the outer case 2 ] the case where it is the loading mechanism 37, The 1st storage 100 is inserted between the derivation spring parts 33 and 33 by which elastic displacement is carried out, and the terminal electrodes 105 and 105 and ... are connected to the contact buttons 35 and 35 and ... which are awaited, respectively (refer to drawing 23).

[0114]If it is inserted in this slot 4 after the 2nd storage 200 has approached the left to the slot 4 of the outer case 2, The inclined plane 33b of the derivation spring part 33 on the left-hand side of the derivation lever 31 \*\*\*\*s, it is moved back, and the 2nd storage 200 is moved in the ASelectrode-holder 281 direction by the thrust to the inclined plane 33b of the 2nd storage 200 at this time (refer to drawing 24). Therefore, it is displaced in the contact buttons 35 and 35 and ... at the left side.

[0115]The 2nd storage 200 is inserted between the derivation spring parts 33 and 33, and the terminal electrodes 205 and 205 and ... are connected to the contact buttons 35 and 35 and ... which movement in ASelectrode-holder 281 direction is displaced at the left side, and are awaited, respectively (refer to drawing 25).

[0116]On the other hand, if it is inserted in this slot 4 after the 2nd storage 200 has visited the right direction to the slot 4 of the outer case 2, The inclined plane 33b of the derivation spring part 33 on the right-hand side of the derivation lever 31 \*\*\*\*s to the 2nd storage 200, it is moved back, and the electrode holder 28A is moved to S 2-way by the thrust to the inclined plane 33b of the 2nd storage 200 at this time (refer to drawing 26). Therefore, it is displaced in the contact buttons 35 and 35 and ... at the right direction side.

[0117]The 2nd storage 200 is inserted between the derivation spring parts 33 and 33, and the terminal electrodes 205 and 205 and ... are connected to the contact buttons 35 and 35 and ... which movement to S 2-way of the electrode holder 28A is displaced at the right direction side, and are awaited, respectively (refer to drawing 27).

[0118]If it is in the loading mechanism 38 as indicated above, Since the derivation lever 31A is moved to the arrangement direction of the terminal electrodes 105 and 105 of the 1st storage 100 and the 2nd storage 200 inserted in the electrode holder 28A, ..., 205 and 205, and ..., Connection with the contact buttons 35 and 35, ..., the terminal electrodes 105 and 105 and ... or the terminal electrodes 205 and 205, and ... can be ensured.

[0119]Since it is certainly derived to one of the derivation spring parts 33 even if it is inserted in the slot 4, where which [ on either side ] side is approached the 2nd storage 200, it can connect certainly the contact buttons 35 and 35, ..., the terminal electrodes 205 and 205 and ...

[0120]Even if it is in the loading mechanism 38, the spring for neutrality for making the derivation lever 31A hold in a center valve position may be provided.

[0121]Next, the derivation lever 31B which is the 2nd modification of the derivation lever 31 is explained (refer to drawing 28 thru/or drawing 36). Since it is only different that the 2nd modification shown below is supported as compared with the derivation lever 31, enabling free rotation of the derivation lever 31B which has only the one derivation spring part 33 in the electrode holder 28, Only a different portion as compared with the derivation lever 31 is explained to details, the same numerals as the numerals given to the same portion in the derivation lever 31 about other portions are attached, and explanation is omitted.

[0122]The derivation spring part 33 projected to the abbreviated front is formed in one, and the derivation lever 31B comprises either of the both-the-right-and-left-ends parts of the base 32 and this base 32, for example, a right end section, (refer to drawing 28).

[0123]In the base 32, the rotating shaft part 32a is supported by the base part 29 of the electrode holder 28, enabling free rotation.

[0124]The derivation lever 31B is energized in the R1 direction with the extension spring 39 stretched between the base 32 and the spring supporter which was formed in the storage applied part 27, and which are not illustrated (refer to drawing 28). Therefore, in the state where external force is not given to the derivation lever 31B, the rotation to R1 direction is regulated in contact with the restriction projection 29b of the left-hand side where the base 32 was established in the base part 29. In the state where the rotation to BRderivation lever 311 direction was regulated, the front end of the inclined plane 33b of the derivation spring part 33 is located [ the position of the right behind of the inner surface of the guide wall part 30a of the electrode holder 28, or / its ] in right-hand side whether it is small (refer to drawing 28).

[0125]The loading mechanism 40 which carries out loading of the 1st storage 100 and 2nd storage 200 is constituted by the electrode holder 28, the derivation lever 31B, and the terminal area 34 which were constituted as mentioned above.

[0126]Below, the loading operation of the loading mechanism 40 is explained (refer to drawing 29 thru/or drawing 36).

[0127]If the 1st storage 100 is inserted in the slot 4, the sides 101b and 101b of the 1st storage 100 are shown at the guide wall parts 30a and 30a of the guide part 30 of the electrode holder 28, and are moved back (refer to drawing 29).

[0128]The inclined plane 33b of the derivation spring part 33 of the derivation lever 31B \*\*\*\*s to the 1st storage 100 moved back (refer to drawing 30). If the 1st storage 100 is moved back, by the thrust to the inclined plane 33b of the 1st storage 100, the derivation lever 31B will resist the spring force of the extension spring 39, and it will rotate to R 2-way (refer to drawing 31). Therefore, it is displaced in the contact buttons 35 and 35 and ... at the right direction side.

[0129]When the 1st storage 100 is inserted in the electrode holder 28, rotate the derivation lever 31B to the rotation end in R 2-way, but. In this rotation end, Chuo Line Pm in the longitudinal direction of the terminal area 34 is slightly come together and located in the right direction to Chuo Line P1 in the longitudinal direction of the polar zone 102 of the 1st storage 100 (refer to drawing 31).

[0130]The terminal electrodes 105 and 105 and ... are connected to the contact buttons 35 and 35 and ... which are displaced at the right direction side and awaited by moving the 1st storage 100 back further, respectively (refer to drawing 32). Although Chuo Line Pm in the longitudinal direction of the terminal area 34 is slightly come together and located in the right direction to Chuo Line P1 in the longitudinal direction of the polar zone 102 of the 1st storage 100 at this time, Since the contact buttons 35 and 35 and width in the longitudinal direction of ... are made smaller than the terminal electrodes 105 and 105 and the width in the longitudinal direction of ... as described above, The difference of Chuo Line Pm and Chuo Line P1 is absorbed by the difference of the contact buttons 35 and 35, the width in the longitudinal direction of ..., and the width in the terminal electrodes 105 and 105 and the longitudinal direction of ..., and the terminal electrodes 105 and 105 and ... are properly connected to the contact buttons 35 and 35 and ..., respectively.

[0131]The engagement piece 27a is engaging with the engagement groove 111 of the 1st storage 100 in the contact buttons 35 and 35 and the state where the terminal electrodes 105 and 105 and ... were connected to ..., respectively (refer to drawing 32).

[0132]If it is inserted in this slot 4 after the 2nd storage 200 has approached the left to the slot 4, the 2nd storage 200 is back moved through the left-hand side of the inclined plane 33b of the derivation spring part 33 (refer to drawing 33).

[0133]Since the engagement groove where the engagement piece 27a is inserted in the 2nd storage 200 is not formed, The engagement piece 27a \*\*\*\*s to the 2nd storage 200, approaching \*\*\*\*\*, it is moved back and the terminal electrodes 205 and 205 and ... are connected to the contact buttons 35 and 35 and ... which are awaited, respectively (refer to drawing 34). Although Chuo Line Pm in the longitudinal direction of the terminal area 34 is slightly come together and located in the left to Chuo Line P2 in the longitudinal direction of the polar zone 202 of the 2nd storage 200 at this time, Since the contact buttons 35 and 35 and width in the longitudinal direction of ... are made smaller than the terminal electrodes 205 and 205 and the width in the longitudinal direction of ... as described above, The difference of Chuo Line Pm and Chuo Line P2



is absorbed by the difference of the contact buttons 35 and 35, the width in the longitudinal direction of ..., and the width in the terminal electrodes 205 and 205 and the longitudinal direction of ..., and the terminal electrodes 205 and 205 and ... are properly connected to the contact buttons 35 and 35 and ..., respectively.

[0134]On the other hand, if it is inserted in this slot 4 after the 2nd storage 200 has visited the right direction to the slot 4, the inclined plane 33b of the derivation spring part 33 of the derivation lever 31B will \*\*\*\* to the 2nd storage 200.

[0135]The inclined plane 33b \*\*\*\*s to the 2nd storage 200, it is moved back, and the derivation lever 31B rotates to R 2-way by the thrust to the inclined plane 33b of the 2nd storage 200 at this time (refer to drawing 35). Therefore, it is displaced in the contact buttons 35 and 35 and ... at the right direction side.

[0136]The terminal electrodes 205 and 205 and ... are connected to the contact buttons 35 and 35 and ... for which the rotation to R 2-way of the derivation lever 31B is displaced at the right direction side and which are awaiting the 2nd storage 200, respectively (refer to drawing 36). Although Chuo Line Pm in the longitudinal direction of the terminal area 34 is slightly come together and located in the left to Chuo Line P2 in the longitudinal direction of the polar zone 202 of the 2nd storage 200 at this time, Since the contact buttons 35 and 35 and width in the longitudinal direction of ... are made smaller than the terminal electrodes 205 and 205 and the width in the longitudinal direction of ... as described above, The difference of Chuo Line Pm and Chuo Line P2 is absorbed by the difference of the contact buttons 35 and 35, the width in the longitudinal direction of ..., and the width in the terminal electrodes 205 and 205 and the longitudinal direction of ..., and the terminal electrodes 205 and 205 and ... are properly connected to the contact buttons 35 and 35 and ..., respectively.

[0137]Since the derivation lever 31B is constituted by only the derivation spring part 33 of the bases 32 and 1 if it is in the loading mechanism 40 as indicated above, much more simplification of a mechanism can be attained.

[0138]The derivation spring part 33 of the above-mentioned derivation lever 31B may be formed as a flare portion which does not have the spring nature which is not displaced to the base 32 in the derivation spring part 33, although elastic displacement is enabled to the base 32.

[0139]Although the derivation lever 31B supported enabling rotation free as the 2nd modification of the derivation lever 31 in the electrode holder 28 was explained to the above, As the 3rd modification, it may replace with the derivation lever 31B, and the derivation lever 31C made movable to the electrode holder 28 in the longitudinal direction may be formed like the derivation lever 31A (refer to drawing 37).

[0140]The derivation spring part 33 projected to the abbreviated front is formed in one, and the derivation lever 31C comprises either of the both-the-right-and-left-ends parts of the base 32C and this base 32C, for example, a right end section. In the base 32C, it estranges at right and left, the long supported holes 32c and 32c are formed in a longitudinal direction, the holding pins 28a and 28a of the electrode holder 28A are inserted in these supported holes 32c and 32c, and the derivation lever 31C is supported by the electrode holder 28A, enabling free movement to a longitudinal direction. The terminal area 34 is formed in the front face of the base 32C of the derivation lever 31C.

[0141]The derivation lever 31C is energized in the S1 direction with the extension spring 41 stretched between the base 32C and the spring supporter which was formed in the storage applied part 27, and which are not illustrated. Therefore, the base 32C is located in the move end by the side of a left in the state where external force is not given to the derivation lever 31C.

[0142]The loading mechanism 42 which carries out loading of the 1st storage 100 and 2nd storage 200 is constituted by the electrode holder 28A, the derivation lever 31C, and the terminal area 34 which were constituted as mentioned above.

[0143]Since operation of the loading mechanism 42 only replaces operation [ in / in the rotational operation in the R1-R 2-way of the derivation lever 31B / the S1-S 2-way of the derivation lever 31C ] in operation of the loading mechanism 40, explanation is omitted.

[0144]If it is in the loading mechanism 42 as indicated above, Since the derivation lever 31C is constituted by only the derivation spring part 33 of the bases 32C and 1, Since slide operation of



the terminal area 34 which could attain much more simplification of the mechanism and was provided in the derivation lever 31C is carried out to the arrangement direction of the terminal electrodes 105 and 105, ..., 205 and 205, and ..., Connection with the contact buttons 35 and 35, ..., the terminal electrodes 105 and 105 and ... or the terminal electrodes 205 and 205, and ... can be ensured.

[0145] Each shape and structures of each part which were shown in the above-mentioned embodiment are only what showed a mere example of the embodiment for operation of this invention, and the technical scope of this invention is not restrictively interpreted by these.

[0146]

[Effect of the Invention] So that clearly from the place indicated above the loading mechanism of this invention storage, The electrode holder to which the tabular storage which has the semiconductor memory built in the case and two or more terminal electrodes arranged by the case is inserted, and it shows this storage, Have two or more contact buttons connected to two or more terminal electrodes of a storage by being engaged, respectively, and the contact button of this plurality to the abbreviated arrangement direction of the terminal electrode of the storage inserted in an electrode holder A movable terminal area, When a storage was inserted in an electrode holder, the contact button and the terminal electrode were provided with the derivation lever which derives a terminal area and a storage in the direction engaged mutually.

[0147] Therefore, loading of several storages with which sizes differ can be carried out without using an adapter, and improvement in the user-friendliness by sharing of the slot in which a storage is inserted can be aimed at.

[0148] Since the detection means for detecting the difference in the size of the storage inserted in the slot is not needed and the guide for every storage is not needed, either, reduction of the manufacturing cost of the loading mechanism by the simplification of a mechanism can be aimed at.

[0149] Since it was made to move a terminal area to an derivation lever and one when the above-mentioned terminal area is provided in an derivation lever and a storage is inserted in an electrode holder if it was in the invention indicated to claim 2, The link mechanism for operating a terminal area with operation of an derivation lever is unnecessary, and reduction of part mark can be aimed at, and improvement in reliability of operation can be aimed at.

[0150] If it is in the invention indicated to claim 3, on the above-mentioned derivation lever The inside of the outside surface of a storage, Since the derivation spring part in which elastic displacement is possible was provided when at least one field of the fields which intersect perpendicularly with the field where it intersected perpendicularly with the path of insertion to an electrode holder, and the terminal electrode has been arranged was touched, a terminal electrode can derive each storage in the direction connected to a contact button certainly.

[0151] Since the above-mentioned derivation lever is made rotatable to an electrode holder and two or more contact buttons of the terminal area were moved to the abbreviated arrangement direction of two or more terminal electrodes of a storage if it was in the invention indicated to claim 4, Sharing of a slot can be attained only by making an derivation lever rotatable in an electrode holder, and simplification of a mechanism can be attained.

[0152] If it is in the invention indicated to claim 5, it is supposed that it is movable to the arrangement direction of the terminal electrode of the storage in which the above-mentioned derivation lever is inserted by this electrode holder to an electrode holder, Since two or more contact buttons of the terminal area were moved to the arrangement direction of two or more terminal electrodes of a storage, connection between a contact button and a terminal electrode can be ensured.

[0153] If it is in the invention indicated to claim 6, when the 1st storage whose size of the case in the arrangement direction of the above-mentioned terminal electrode is the 1st size is inserted in an electrode holder, an electrode holder guides the 1st storage concerned, Since the derivation lever derived the 2nd storage concerned when the 2nd storage that is the 2nd size whose size of the case in the arrangement direction of a terminal electrode is smaller than the 1st size was inserted in an electrode holder, Loading of each of the 1st storage and the 2nd storage can be carried out properly and certainly.

[0154]If it is in the invention indicated to claim 7, the flare portion of the couple which the above-mentioned derivation lever is made rotatable to an electrode holder, and is estranged on an derivation lever in the arrangement direction of the terminal electrode of a storage is provided, When the 2nd storage of the above is inserted in an electrode holder, a flare portion \*\*\*\*\* to the 2nd storage concerned, it is derived between the flare portions of a couple, and an derivation lever rotates to an electrode holder and two or more contact buttons of a terminal area are moved to the abbreviated arrangement direction of two or more terminal electrodes of a storage, Since each contact button of the terminal area was engaged and connected to each terminal electrode of the 2nd storage and it is certainly derived to one of derivation spring parts even if the 2nd storage is inserted in the state where it inclined to the electrode holder, a contact button and a terminal electrode are certainly connectable.

[0155]The flare portion of the couple which it supposes that it is movable to the arrangement direction of the terminal electrode of the storage in which the above-mentioned derivation lever is inserted by this electrode holder to an electrode holder if it is in the invention indicated to claim 8, and is estranged on an derivation lever in the arrangement direction of the terminal electrode of a storage is provided, When the 2nd storage of the above is inserted in an electrode holder, a flare portion \*\*\*\*\* to the 2nd storage concerned, and it is derived between the flare portions of a couple, and. An derivation lever is moved to the arrangement direction of a terminal electrode to an electrode holder, and two or more contact buttons of a terminal area are moved to the arrangement direction of two or more terminal electrodes of a storage, Since each contact button of the terminal area was engaged and connected to each terminal electrode of the 2nd storage, Since it is certainly derived to one of derivation spring parts even if the 2nd storage is inserted in the state where it inclined to the electrode holder, Since a contact button and a terminal electrode can be connected certainly and a terminal area is moved to the arrangement direction of a terminal electrode, connection between a contact button and a terminal electrode can be ensured.

[0156]this invention storage medium drive device is a storage medium drive device which performs the writing and/or read-out of data to the tabular storage which has the semiconductor memory built in the case, and two or more terminal electrodes arranged by the case, The electrode holder to which a tabular storage is inserted and it shows this storage, Have two or more contact buttons connected to two or more terminal electrodes of a storage by being engaged, respectively, and the contact button of this plurality to the abbreviated arrangement direction of the terminal electrode of the storage inserted in an electrode holder A movable terminal area, When a storage was inserted in an electrode holder, the contact button and the terminal electrode were provided with the derivation lever which derives a terminal area and a storage in the direction engaged mutually.

[0157]Therefore, loading of several storages with which sizes differ can be carried out without using an adapter, and improvement in the user-friendliness by sharing of the slot in which a storage is inserted can be aimed at.

[0158]Since the detection means for detecting the difference in the size of the storage inserted in the slot is not needed and the guide for every storage is not needed, either, reduction of the manufacturing cost of the storage medium drive device by the simplification of a mechanism can be aimed at.

[0159]Since it was made to move a terminal area to an derivation lever and one when the above-mentioned terminal area is provided in an derivation lever and a storage is inserted in an electrode holder if it was in the invention indicated to claim 10, The link mechanism for operating a terminal area with operation of an derivation lever is unnecessary, and reduction of part mark can be aimed at, and improvement in reliability of operation can be aimed at.

[0160]If it is in the invention indicated to claim 11, on the above-mentioned derivation lever The inside of the outside surface of a storage, Since the derivation spring part in which elastic displacement is possible was provided when at least one field of the fields which intersect perpendicularly with the field where it intersected perpendicularly with the path of insertion to an electrode holder, and the terminal electrode has been arranged was touched, a terminal electrode can derive each storage in the direction connected to a contact button certainly.

[0161] Since the above-mentioned derivation lever is made rotatable to an electrode holder and two or more contact buttons of the terminal area were moved to the abbreviated arrangement direction of two or more terminal electrodes of a storage if it was in the invention indicated to claim 12, Sharing of a slot can be attained only by making an derivation lever rotatable in an electrode holder, and simplification of a mechanism can be attained.

[0162] If it is in the invention indicated to claim 13, it is supposed that it is movable to the arrangement direction of the terminal electrode of the storage in which the above-mentioned derivation lever is inserted by this electrode holder to an electrode holder, Since two or more contact buttons of the terminal area were moved to the arrangement direction of two or more terminal electrodes of a storage, connection between a contact button and a terminal electrode can be ensured.

[0163] If it is in the invention indicated to claim 14, when the 1st storage whose size of the case in the arrangement direction of the above-mentioned terminal electrode is the 1st size is inserted in an electrode holder, an electrode holder guides the 1st storage concerned, Since the derivation lever derived the 2nd storage concerned when the 2nd storage that is the 2nd size whose size of the case in the arrangement direction of a terminal electrode is smaller than the 1st size was inserted in an electrode holder, Loading of each of the 1st storage and the 2nd storage can be carried out properly and certainly.

[0164] If it is in the invention indicated to claim 15, the flare portion of the couple which the above-mentioned derivation lever is made rotatable to an electrode holder, and is estranged on an derivation lever in the arrangement direction of the terminal electrode of a storage is provided, When the 2nd storage of the above is inserted in an electrode holder, a flare portion \*\*\*\*s to the 2nd storage concerned, it is derived between the flare portions of a couple, and an derivation lever rotates to an electrode holder and two or more contact buttons of a terminal area are moved to the abbreviated arrangement direction of two or more terminal electrodes of a storage, Since each contact button of the terminal area was engaged and connected to each terminal electrode of the 2nd storage and it is certainly derived to one of derivation spring parts even if the 2nd storage is inserted in the state where it inclined to the electrode holder, a contact button and a terminal electrode are certainly connectable.

[0165] The flare portion of the couple which it supposes that it is movable to the arrangement direction of the terminal electrode of the storage in which the above-mentioned derivation lever is inserted by this electrode holder to an electrode holder if it is in the invention indicated to claim 16, and is estranged on an derivation lever in the arrangement direction of the terminal electrode of a storage is provided, When the 2nd storage of the above is inserted in an electrode holder, a flare portion \*\*\*\*s to the 2nd storage concerned, and it is derived between the flare portions of a couple, and. An derivation lever is moved to the arrangement direction of a terminal electrode to an electrode holder, and two or more contact buttons of a terminal area are moved to the arrangement direction of two or more terminal electrodes of a storage, Since each contact button of the terminal area was engaged and connected to each terminal electrode of the 2nd storage, Since it is certainly derived to one of derivation spring parts even if the 2nd storage is inserted in the state where it inclined to the electrode holder, Since a contact button and a terminal electrode can be connected certainly and a terminal area is moved to the arrangement direction of a terminal electrode, connection between a contact button and a terminal electrode can be ensured.

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TECHNICAL FIELD

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[Field of the Invention]This invention relates to the loading mechanism and storage medium drive device of a storage. It is related with the technical field about the storage medium drive device provided with the loading mechanism which carries out loading of the tabular storage which has semiconductor memory and two or more terminal electrodes in detail, and this loading mechanism.

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PRIOR ART

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[Description of the Prior Art]The tabular storage which has semiconductor memory and two or more terminal electrodes is inserted in a slot, a storage applied part is equipped, there is a storage medium drive device which performs the writing and/or read-out of data to the storage concerned, and the thing of various sizes is provided as a tabular storage now.

[0003]Although such some storages have a common terminal electrode which it is inserted in the slot of the same storage medium drive device, and can perform writing and/or read-out of data, Since a size changes with differences between length, width, and thickness, respectively, a storage with a small size is equipped with an adapter, and it inserts in a slot, and enables it to use any storage which has a common terminal electrode as a means to share a slot.

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EFFECT OF THE INVENTION

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[Effect of the Invention]So that clearly from the place indicated above the loading mechanism of this invention storage, The electrode holder to which the tabular storage which has the semiconductor memory built in the case and two or more terminal electrodes arranged by the case is inserted, and it shows this storage, Have two or more contact buttons connected to two or more terminal electrodes of a storage by being engaged, respectively, and the contact button of this plurality to the abbreviated arrangement direction of the terminal electrode of the storage inserted in an electrode holder A movable terminal area, When a storage was inserted in an electrode holder, the contact button and the terminal electrode were provided with the derivation lever which derives a terminal area and a storage in the direction engaged mutually. [0147]Therefore, loading of several storages with which sizes differ can be carried out without using an adapter, and improvement in the user-friendliness by sharing of the slot in which a storage is inserted can be aimed at.

[0148]Since the detection means for detecting the difference in the size of the storage inserted in the slot is not needed and the guide for every storage is not needed, either, reduction of the manufacturing cost of the loading mechanism by the simplification of a mechanism can be aimed at.

[0149]Since it was made to move a terminal area to an derivation lever and one when the above-mentioned terminal area is provided in an derivation lever and a storage is inserted in an electrode holder if it was in the invention indicated to claim 2, The link mechanism for operating a terminal area with operation of an derivation lever is unnecessary, and reduction of part mark can be aimed at, and improvement in reliability of operation can be aimed at.

[0150]If it is in the invention indicated to claim 3, on the above-mentioned derivation lever The inside of the outside surface of a storage, Since the derivation spring part in which elastic displacement is possible was provided when at least one field of the fields which intersect perpendicularly with the field where it intersected perpendicularly with the path of insertion to an electrode holder, and the terminal electrode has been arranged was touched, a terminal electrode can derive each storage in the direction connected to a contact button certainly.

[0151]Since the above-mentioned derivation lever is made rotatable to an electrode holder and two or more contact buttons of the terminal area were moved to the abbreviated arrangement direction of two or more terminal electrodes of a storage if it was in the invention indicated to claim 4, Sharing of a slot can be attained only by making an derivation lever rotatable in an electrode holder, and simplification of a mechanism can be attained.

[0152]If it is in the invention indicated to claim 5, it is supposed that it is movable to the arrangement direction of the terminal electrode of the storage in which the above-mentioned derivation lever is inserted by this electrode holder to an electrode holder, Since two or more contact buttons of the terminal area were moved to the arrangement direction of two or more terminal electrodes of a storage, connection between a contact button and a terminal electrode can be ensured.

[0153]If it is in the invention indicated to claim 6, when the 1st storage whose size of the case in the arrangement direction of the above-mentioned terminal electrode is the 1st size is inserted in an electrode holder, an electrode holder guides the 1st storage concerned, Since the

derivation lever derived the 2nd storage concerned when the 2nd storage that is the 2nd size whose size of the case in the arrangement direction of a terminal electrode is smaller than the 1st size was inserted in an electrode holder, Loading of each of the 1st storage and the 2nd storage can be carried out properly and certainly.

[0154]If it is in the invention indicated to claim 7, the flare portion of the couple which the above-mentioned derivation lever is made rotatable to an electrode holder, and is estranged on an derivation lever in the arrangement direction of the terminal electrode of a storage is provided, When the 2nd storage of the above is inserted in an electrode holder, a flare portion \*\*\*\*s to the 2nd storage concerned, it is derived between the flare portions of a couple, and an derivation lever rotates to an electrode holder and two or more contact buttons of a terminal area are moved to the abbreviated arrangement direction of two or more terminal electrodes of a storage, Since each contact button of the terminal area was engaged and connected to each terminal electrode of the 2nd storage and it is certainly derived to one of derivation spring parts even if the 2nd storage is inserted in the state where it inclined to the electrode holder, a contact button and a terminal electrode are certainly connectable.

[0155]The flare portion of the couple which it supposes that it is movable to the arrangement direction of the terminal electrode of the storage in which the above-mentioned derivation lever is inserted by this electrode holder to an electrode holder if it is in the invention indicated to claim 8, and is estranged on an derivation lever in the arrangement direction of the terminal electrode of a storage is provided, When the 2nd storage of the above is inserted in an electrode holder, a flare portion \*\*\*\*s to the 2nd storage concerned, and it is derived between the flare portions of a couple, and. An derivation lever is moved to the arrangement direction of a terminal electrode to an electrode holder, and two or more contact buttons of a terminal area are moved to the arrangement direction of two or more terminal electrodes of a storage, Since each contact button of the terminal area was engaged and connected to each terminal electrode of the 2nd storage, Since it is certainly derived to one of derivation spring parts even if the 2nd storage is inserted in the state where it inclined to the electrode holder, Since a contact button and a terminal electrode can be connected certainly and a terminal area is moved to the arrangement direction of a terminal electrode, connection between a contact button and a terminal electrode can be ensured.

[0156]this invention storage medium drive device is a storage medium drive device which performs the writing and/or read-out of data to the tabular storage which has the semiconductor memory built in the case, and two or more terminal electrodes arranged by the case, The electrode holder to which a tabular storage is inserted and it shows this storage, Have two or more contact buttons connected to two or more terminal electrodes of a storage by being engaged, respectively, and the contact button of this plurality to the abbreviated arrangement direction of the terminal electrode of the storage inserted in an electrode holder A movable terminal area, When a storage was inserted in an electrode holder, the contact button and the terminal electrode were provided with the derivation lever which derives a terminal area and a storage in the direction engaged mutually.

[0157]Therefore, loading of several storages with which sizes differ can be carried out without using an adapter, and improvement in the user-friendliness by sharing of the slot in which a storage is inserted can be aimed at.

[0158]Since the detection means for detecting the difference in the size of the storage inserted in the slot is not needed and the guide for every storage is not needed, either, reduction of the manufacturing cost of the storage medium drive device by the simplification of a mechanism can be aimed at.

[0159]Since it was made to move a terminal area to an derivation lever and one when the above-mentioned terminal area is provided in an derivation lever and a storage is inserted in an electrode holder if it was in the invention indicated to claim 10, The link mechanism for operating a terminal area with operation of an derivation lever is unnecessary, and reduction of part mark can be aimed at, and improvement in reliability of operation can be aimed at.

[0160]If it is in the invention indicated to claim 11, on the above-mentioned derivation lever The inside of the outside surface of a storage, Since the derivation spring part in which elastic

displacement is possible was provided when at least one field of the fields which intersect perpendicularly with the field where it intersected perpendicularly with the path of insertion to an electrode holder, and the terminal electrode has been arranged was touched, a terminal electrode can derive each storage in the direction connected to a contact button certainly.

[0161] Since the above-mentioned derivation lever is made rotatable to an electrode holder and two or more contact buttons of the terminal area were moved to the abbreviated arrangement direction of two or more terminal electrodes of a storage if it was in the invention indicated to claim 12, Sharing of a slot can be attained only by making an derivation lever rotatable in an electrode holder, and simplification of a mechanism can be attained.

[0162] If it is in the invention indicated to claim 13, it is supposed that it is movable to the arrangement direction of the terminal electrode of the storage in which the above-mentioned derivation lever is inserted by this electrode holder to an electrode holder, Since two or more contact buttons of the terminal area were moved to the arrangement direction of two or more terminal electrodes of a storage, connection between a contact button and a terminal electrode can be ensured.

[0163] If it is in the invention indicated to claim 14, when the 1st storage whose size of the case in the arrangement direction of the above-mentioned terminal electrode is the 1st size is inserted in an electrode holder, an electrode holder guides the 1st storage concerned, Since the derivation lever derived the 2nd storage concerned when the 2nd storage that is the 2nd size whose size of the case in the arrangement direction of a terminal electrode is smaller than the 1st size was inserted in an electrode holder, Loading of each of the 1st storage and the 2nd storage can be carried out properly and certainly.

[0164] If it is in the invention indicated to claim 15, the flare portion of the couple which the above-mentioned derivation lever is made rotatable to an electrode holder, and is estranged on an derivation lever in the arrangement direction of the terminal electrode of a storage is provided, When the 2nd storage of the above is inserted in an electrode holder, a flare portion \*\*\*\*s to the 2nd storage concerned, it is derived between the flare portions of a couple, and an derivation lever rotates to an electrode holder and two or more contact buttons of a terminal area are moved to the abbreviated arrangement direction of two or more terminal electrodes of a storage, Since each contact button of the terminal area was engaged and connected to each terminal electrode of the 2nd storage and it is certainly derived to one of derivation spring parts even if the 2nd storage is inserted in the state where it inclined to the electrode holder, a contact button and a terminal electrode are certainly connectable.

[0165] The flare portion of the couple which it supposes that it is movable to the arrangement direction of the terminal electrode of the storage in which the above-mentioned derivation lever is inserted by this electrode holder to an electrode holder if it is in the invention indicated to claim 16, and is estranged on an derivation lever in the arrangement direction of the terminal electrode of a storage is provided, When the 2nd storage of the above is inserted in an electrode holder, a flare portion \*\*\*\*s to the 2nd storage concerned, and it is derived between the flare portions of a couple, and. An derivation lever is moved to the arrangement direction of a terminal electrode to an electrode holder, and two or more contact buttons of a terminal area are moved to the arrangement direction of two or more terminal electrodes of a storage, Since each contact button of the terminal area was engaged and connected to each terminal electrode of the 2nd storage, Since it is certainly derived to one of derivation spring parts even if the 2nd storage is inserted in the state where it inclined to the electrode holder, Since a contact button and a terminal electrode can be connected certainly and a terminal area is moved to the arrangement direction of a terminal electrode, connection between a contact button and a terminal electrode can be ensured.

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TECHNICAL PROBLEM

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[Problem(s) to be Solved by the Invention]However, in the above which attained sharing of the slot using the adapter, when trying to write data to a storage with a small size, there is a problem that an adapter needs to be equipped and it is user-unfriendly each time.

[0005]On the other hand, in order to attain sharing of a slot, the contact button connected to the terminal electrode of a storage is fixed in the inside of a slot, Although providing two or more guides for every storage from which a size differs inside a slot, detecting whether the storage inserted in the slot is which thing, and changing a guide according to the detection result concerned is also taken into consideration, With such composition, a mechanism will become complicated and increase of the manufacturing cost of a storage medium drive device will be caused.

[0006]Then, the loading mechanism and storage medium drive device of this invention storage make it a technical problem to aim at improvement in user-friendliness, after securing the simplification of a mechanism.

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MEANS

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[Means for Solving the Problem]A loading mechanism and a storage medium drive device of this invention storage, An electrode holder to which a tabular storage which has semiconductor memory built in a case and two or more terminal electrodes arranged by case is inserted in order to solve the above-mentioned technical problem, and it shows this storage, Have two or more contact buttons connected to two or more terminal electrodes of a storage by being engaged, respectively, and a contact button of this plurality to an abbreviated arrangement direction of a terminal electrode of a storage inserted in an electrode holder A movable terminal area, When a storage is inserted in an electrode holder, a contact button and a terminal electrode provide an derivation lever which derives a terminal area and a storage in the direction engaged mutually. [0008]Therefore, if it is in a loading mechanism and a storage medium drive device of this invention storage, when a storage is inserted in an electrode holder, a contact button of a terminal area is derived in the direction close to a terminal electrode of a storage.

[0009]

[Embodiment of the Invention]Below, the loading mechanism of this invention storage and the embodiment of a storage medium drive device are described according to an accompanying drawing.

[0010]First, the tabular storage with which it is inserted in the slot of a storage medium drive device, and reading and writing of data are performed is explained (refer to drawing 1 thru/or drawing 5).

[0011]Two kinds of 1st tabular storage 100 that differs in a size, and the 2nd tabular storage 200 are used for the storage medium drive device concerned (refer to drawing 1 and drawing 2).

[0012]The 1st storage 100 succeeds in approximately rectangular shape, for example, the length W11 shall set width W12 to 50 mm, it shall be 21.5 mm, and the thickness W13 is 2.8 mm (refer to drawing 1).

[0013]Semiconductor memory, such as a flash memory, is built in the case 101, and, as for the case 101, the 1st storage 100 has the 1st principal surface 101a that has the greatest area, and the 2nd principal surface that are fields of the opposite hand of this 1st principal surface 101a and that is not illustrated.

[0014]The polar zone 102 is formed in the end part in the longitudinal direction (cross direction) of the 1st principal surface 101a. The ten crevices 104 and 104 for connection and ... are formed in the polar zone 102 of two or more bridge walls 103 and 103 which estranged in the direction of the shorter side of the 1st principal surface 101a (longitudinal direction), and were established at equal intervals, and ... the crevices 104 and 104 for connection and ... can be set to the longitudinal direction of the 1st principal surface 101a — on the other hand (back) — and it can set to the thickness direction (sliding direction) of the 1st storage 100 — an opening being carried out on the other hand (upper part), and, The terminal electrodes 105 and 105 and ... are arranged at the crevices 104 and 104 for connection, and ..., respectively.

[0015]The portion which adjoins the polar zone 102 of the 1st storage 100 is provided in the upper part as the notch 106 by which the opening was carried out, and the rim of this notch 106 is formed as the chamfer 107 which succeeds in an approximate circle arc.

[0016]When the 1st storage 100 is inserted in the slot which a storage medium drive device

mentions later in the regular state, the notch 106 and the chamfer 107 serve as escape over the erroneous insertion prevention parts provided in the inside of a slot, and a slot is inserted and equipped with the 1st storage 100. On the other hand, when the 1st storage 100 is inserted in a slot from the opposite hand in back return or a longitudinal direction, The corner in which the notch 106 and the chamfer 107 of the case 101 are not formed is contacted by erroneous insertion prevention parts, insertion into the slot of the 1st storage 100 is regulated, and erroneous insertion is prevented.

[0017]The incorrect record prevention tab 108 is formed near the polar zone 102 of the 1st principal surface 101a, enabling a free slide. In the state where it was made to slide to one side, the incorrect record prevention tab 108 enables the writing of the data to semiconductor memory, and has a function which makes the writing of the data to semiconductor memory impossible in the state where it was made to slide to another side.

[0018]The crevice 109 for omission prevention is formed in the side of the incorrect record prevention tab 108 at the case 101. The crevice 109 for omission prevention plays the role which prevents omission of the 1st storage 100, when the 1st storage 100 is inserted in a slot, and the drop prevention part provided in the inside of a slot is engaged.

[0019]The engaging recess 110 is formed in the side edge of the side and opposite hand in which the crevice 109 for omission prevention of the 1st principal surface 101a was formed, and this engaging recess 110 is formed in the approximately center part in the longitudinal direction of the 1st storage 100. The engaging recess 110 plays the role which detects that the 1st storage 100 was inserted in the slot in the regular state, when the engagement protruding part provided in the inside of a slot is engaged.

[0020]The engagement groove 111 by which the opening was carried out to back at the position of the side of the polar zone 102 is formed in the near side 101b in which the engaging recess 110 of the case 101 was formed. The engagement piece which was provided in the inside of a slot and which is mentioned later engages with the engagement groove 111.

[0021]It succeeds in approximately rectangular shape, for example, the length W21 shall set width W22 to 31 mm, it shall be 20 mm, the thickness W23 shall be 1.6 mm, and the 2nd storage 200 is formed smaller than the 1st storage 100 (refer to drawing 2).

[0022]Except for the part, the polar zone 102 of the 1st storage 100 and the common polar zone 202 are formed in the 1st principal surface 201a, and the 2nd storage 200 is made the same as the bridge walls 103 and 103 of the 1st storage 100, and the pitch of ... by the bridge walls 203 and 203 and the pitch of ...

[0023]The 2nd storage 200 has the same each part as the 1st storage 100, The terminal electrodes 205 and 205 and ... are arranged at the crevices 204 and 204 for connection, and ..., respectively, and it has the notch 206, the chamfer 207, the incorrect record prevention tab 208, the crevice 209 for omission prevention, and the engaging recess 210 in the case 202. The engagement groove equivalent to the engagement groove 111 formed in the 1st storage 100 is not formed in the 2nd storage 200.

[0024]The 2nd storage 200 is made the same as width [ in / in the width in the longitudinal direction of the polar zone 202 / the longitudinal direction of the polar zone 102 of the 1st storage 100 ], The distance D21 from the right end of the terminal electrode 205 in the rightmost side of the 2nd storage 200 to the right lateral 201b of the case 201, It is more slightly [ than the distance D11 from the right end of the terminal electrode 105 in the rightmost side of the 1st storage 100 to the right lateral 101b of the case 101 ] small, The distance D22 from the left end of the terminal electrode 205 in the leftmost side of the 2nd storage 200 to the left lateral 201b of the case 201, It is slightly made smaller than the distance D12 from the left end of the terminal electrode 105 in the leftmost side of the 1st storage 100 to the left lateral 101b of the case 101 (refer to drawing 1 and drawing 2).

[0025]Next, the terminal electrodes 105 and 105 of the 1st storage 100, ... and the terminal electrodes 205 and 205 of the 2nd storage 200, and the electrode structure of ... are explained (refer to drawing 3). The terminal electrodes 105 and 105, ... and the terminal electrodes 205 and 205, and the electrode structure of ... are the same.

[0026]As for each of the terminal electrodes 105 and 105, ... and terminal electrodes 205 and

205, and ..., ten flat electrodes (terminals T1 thru/or T10) are arranged at the single tier.

[0027]The terminal T1 and the terminal T10 are detection voltage VSS terminals. The terminal T2 is an input terminal of serial protocol bus state signal BS. Terminal T3 and the terminal T9 are terminals of a power-supply-voltage V storage. The terminal T4 is an input/output terminal of a serial protocol-data signal. The terminal T5 and the terminal T7 are reserve terminals. The terminals T6 are the detection terminals for detection of the 1st storage 100 and the 2nd storage 200. The terminal T8 is an input terminal of the serial clock SCLK.

[0028]Next, a relation with the internal structure of the terminals T1 thru/or T10, the 1st storage 100, and the 2nd storage 200 is explained (refer to drawing 4). The internal structure of the 1st storage 100 and the 2nd storage 200 is the same.

[0029]Inside the cases 101 and 201, control ICs 112 and 212 and the semiconductor memory 113 and 213 are arranged, respectively.

[0030]Control ICs 112 and 212 have the function to write the data to the semiconductor memory 113 and 213. Control ICs 112 and 212 are connected with the terminal T2, the terminal T4, and the terminal T8, serial protocol bus state signal BS is inputted from the terminal T2, and the serial clock SCLK is inputted from the terminal T8.

[0031]At the time of write operation, the writing of the data inputted from the terminal T4 to the semiconductor memory 113 and 213 is performed based on the serial clock SCLK inputted from serial protocol bus state signal BS and the terminal T8 which are inputted from the terminal T2.

[0032]At the time of reading operation, based on serial protocol bus state signal BS and the serial clock SCLK, read-out of the data from the semiconductor memory 113 and 213 is performed, and the data read via the terminal T4 is outputted to a storage medium drive device.

[0033]Detection voltage VSS is inputted into the terminal T6, the voltage of the terminal T6 is detected by the resistance R in a storage medium drive device, and detection of whether the 1st storage 100 or 2nd storage 200 is inserted in the slot of a storage medium drive device is performed.

[0034]Control ICs 112 and 212 have the memory controllers 112a and 212a, the registers 112b and 212b, the page buffers 112c and 212c, and the serial interface 112d and 212d, respectively (refer to drawing 5).

[0035]The memory controllers 112a and 212a transmit the data between the semiconductor memory 113 and 213 and the page buffers 112c and 212c based on the parameter set as the registers 112b and 212b. The data by which the buffer ring was carried out to the page buffers 112c and 212c, The buffer ring of the data which was transmitted to the storage medium drive device via the serial interface 112d and 212d, and was transmitted from the storage medium drive device is carried out to the page buffers 112c and 212c via the serial interface 112d and 212d.

[0036]Next, the storage medium drive device which write data to the 1st storage 100 and 2nd storage 200 is explained (refer to drawing 5 thru/or drawing 7).

[0037]The storage medium drive device 1 receives the 1st storage 100 and 2nd storage 200, For example, various kinds of data of a video data, still picture data, voice data, HiFi data (music data), the data for computers, the data for control, etc. can be written, and necessary each part is arranged and it grows into the inside of the outer case 2.

[0038]The indicator 3 formed with the liquid crystal panel is formed in the front face 2a of the outer case 2 (refer to drawing 6), and the information about a picture, a character, and the sound and music that were played by this indicator 3 and that are played, an operation guidance message, etc. are displayed on it.

[0039]The slot 4 in which the 1st storage 100 and 2nd storage 200 are inserted is formed in the front face 2a.

[0040]By providing two or more operation keys 5 and 5 and ... in the front face 2a, and operating these operation keys 5 and 5 and ... in it, For example, stop of turning on and off of a power supply, record and reproduction of data, recording operation, reproduction motion, etc., and the rapid traverse and the operation of various kinds already, such as return, change of volume, edit of data, selection of a menu, and setting out of operational mode, at the time of reproduction can be performed.

[0041]The connection terminals 6 and 6 with various kinds of apparatus and ... are provided in the lower end part of the front face 2a. As the connection terminals 6 and 6 and ..., they are the head telephone terminal 6a, the line-out terminal 6b, the mike input terminal 6c, the line-in terminal 6d, the digital input terminal 6e, the USB (Universal Serial Bus) terminal 6f, etc., for example.

[0042]Electric power is supplied to the storage medium drive device 1 via the power receptacle 7 from commercial alternating current power, for example.

[0043]As an interface structure to the 1st storage 100 and 2nd storage 200, the file manager 8, the transmission protocol interface 9, and the serial interface 10 are formed in the storage medium drive device 1 (refer to drawing 5).

[0044]The file manager 8 has the function to manage the 1st storage 100 and 2nd storage 200, and access to the 1st storage 100 and 2nd storage 200 is performed based on instructions of the file manager 8.

[0045]The transmission protocol interface 9 performs access to the registers 112b and 212b and the page buffers 112c and 212c of the 1st storage 100 and the 2nd storage 200.

[0046]When the 1st storage 100 and 2nd storage 200 are inserted in the slot 4, the serial interface 10, The protocol for performing arbitrary data transfer in a serial clock (SCLK), a bus state (BS), and serial data (SDIO) is specified, Data is delivered and received between the serial interface 112d and 212d of the 1st storage 100 or the 2nd storage 200.

[0047]Next, the circuitry provided in the storage medium drive device 1 is explained (refer to drawing 7).

[0048]CPU(Central Processing Unit) 11 functions as a central controlling part of the storage medium drive device 1, and performs motion control of the following each part.

[0049]CPU11 has ROM(ReadOnly Memory)11a and RAM(Random Access Memory)11b as a work region which memorized an operation program and various kinds of constants, for example.

CPU11 performs the control action specified by an operation program based on the above-mentioned operation keys 5 and 5 and the command signal inputted by the operation to ...

[0050]CPU11 makes the flash memory 12 memorize the system construction information about operation of various kinds of mode setting, such as a music recording mode and a display mode, etc. CPU11 can store data in the buffer memory 13 formed of D-RAM etc. on the occasions, such as reading-and-writing operation to the 1st storage 100 and 2nd storage 200, temporarily, for example.

[0051]The real-time clock 14 has the function to calculate a present date. CPU11 checks a present date with the date data from the real-time clock 14.

[0052]USB interface 15 is a communication interface between the external instruments connected to above-mentioned USB terminal 6f provided in the outer case 2. CPU11 can perform data communications via USB interface 15 between the personal computers etc. which are external instruments. For example, transmission and reception of control data, computer data, image data, audio information, etc. are performed.

[0053]As a power supply section, it has the regulator 16 and DC-DC converter 17. When CPU11 considers it as a power turn, it sends out the command signal of a power turn to the regulator 16. The regulator 16 performs rectification/smoothness of the volts alternating current supplied via the power receptacle 7 based on the command signal from CPU11. The power supply voltage from the regulator 16 is transformed into a necessary pressure value in DC-DC converter 17, and is supplied to each part as that of an operation power voltage V storage.

[0054]Access of CPU11 to the 1st storage 100 and 2nd storage 200 is attained via the memory interface 18, and execution of record of various kinds of data, reproduction, edit, etc. of it is enabled.

[0055]CPU11 displays a necessary picture on the indicator 3 provided in the outer case 2 by controlling the display driver 19.

[0056]As an audio signal processor to the connection terminals 6 and 6 provided in the outer case 2, ... 6a, i.e., a head telephone terminal, the line-out terminal 6b, the mike input terminal 6c, the line-in terminal 6d, and the digital input terminal 6e, SAM (Securty Application.) Module: Encryption / development processing part 20, DSP(Digital Signal Processor) 21, the analog-to-

digital converter 22, the power amplification 23, the microphone amplifier 24, the optical input module 25, and the digital input part 26 are formed.

[0057]SAM20 delivers and receives a cryptographic key between CPU11 while performing encryption and decryption (decoding) of data between CPU11 and DSP21. The cryptographic key is memorized by the flash memory 12, for example. SAM20 can perform encryption and decryption using a cryptographic key. The encryption and decryption by SAM20 are performed according to instructions of CPU11, when receiving the time of, for example, transmitting data to the personal computer etc. which are external instruments via USB interface 15, and data.

[0058]DSP21 performs compression processing and elongation processing of audio information based on instructions of CPU11.

[0059]The analog-to-digital converter 22 performs an A/D conversion and D/A conversion about an audio signal.

[0060]The digital input part 26 performs input interface processing of the digital audio data incorporated with the optical input module 25.

[0061]In the storage medium drive device 1, input and output of an audio signal are performed as follows.

[0062]The signal inputted into the digital input terminal 6e via the optical cable from the external instrument, for example, a disk player etc., as digital audio data, With the optical input module 25, photoelectric conversion is carried out, it is incorporated, and reception according to a transmit format is performed by the digital input part 26. Compression processing is carried out by DSP21, and the digital audio data by which reception was carried out are supplied to CPU11, and let them be record data to the 1st storage 100 and 2nd storage 200.

[0063]When a microphone is connected to the mike input terminal 6c, after the input voice signal is amplified by the microphone amplifier 24, an A/D conversion is carried out by the analog-to-digital converter 22, and DSP21 is supplied as digital audio data. The supplied data is supplied to CPU11 via the compression processing in DSP21, and let it be record data to the 1st storage 100 or 2nd storage 200.

[0064]The A/D conversion of the input voice signal from the external instrument connected to the line-in terminal 6d is carried out by the analog-to-digital converter 22, and it is supplied to DSP21 as digital audio data. The supplied data is supplied to CPU11 via the compression processing in DSP21, and let it be record data to the 1st storage 100 or 2nd storage 200.

[0065]On the other hand, when outputting the audio information read from the 1st storage 100 or 2nd storage 200, based on instructions of CPU11, elongation processing is performed by DSP21 about the audio information concerned. The digital audio data in which the expansion process was performed are changed into an analog audio signal by the analog-to-digital converter 22, and are supplied to the power amplification 23. In the power amplification 23, amplification processing for head telephones and amplification processing for line-out are performed, and the head telephone terminal 6a and the line-out terminal 6b are supplied, respectively.

[0066]Next, the internal structure of the slot 4 formed in the outer case 2 is explained (refer to drawing 8 thru/or drawing 11).

[0067]The inside of the slot 4 of the storage medium drive device 1 is formed as the storage applied part 27 equipped with the 1st storage 100 or 2nd storage 200 (refer to drawing 8). The engagement piece 27a which is inserted in the engagement groove 111 of the 1st storage, and is engaged is formed in the storage applied part 27.

[0068]The electrode holder 28 is arranged at the storage applied part 27. The base part 29 which succeeds in plate-like [ longwise ], and the guide parts 30 and 30 provided in the edges on both sides of the front end part of this base part 29 are formed in one, and the electrode holder 28 changes (refer to drawing 8 and drawing 9). The guide parts 30 and 30 comprise the guide wall parts 30a and 30a vertically projected from the base part 29, and the presser-foot walls 30b and 30b projected in the direction which approaches mutually from the tip edge of these guide wall parts 30a and 30a, respectively.

[0069]It estranges right and left and the restriction projection 29a and 29a is formed in the rear end part of the base part 29.

[0070]the guide wall part 30a of the guide parts 30 and 30, and the interval between 30a -- the width W12 of the 1st storage 100 -- abbreviated -- it enlarges slightly whether it is the same (refer to drawing 9), and the interval of the presser-foot walls 30b and 30b and the base part 29 is slightly enlarged from the thickness W13 of the 1st storage 100.

[0071]The derivation lever 31 is supported by the rear end part of the base part 29 of the electrode holder 28, enabling free rotation (refer to drawing 8 thru/or drawing 10). The derivation spring parts 33 and 33 projected to the abbreviated front are formed in one, and the derivation lever 31 comprises the both-the-right-and-left-ends part of the base 32 and this base 32.

[0072]The rotating shaft part 32a is formed in the center section in the longitudinal direction of the base 32, and the derivation lever 31 is supported by the base part 29 of the electrode holder 28 via this rotating shaft part 32a, enabling free rotation.

[0073]The derivation projected parts 33a and 33a projected in the direction which approaches mutually, respectively are formed in the tip part of the derivation spring parts 33 and 33. The inclined planes 33b and 33b displaced in the direction which approaches mutually are formed in the derivation projected parts 33a and 33a as it goes back.

[0074]Elastic displacement of the derivation spring parts 33 and 33 to the direction in which the derivation projected parts 33a and 33a move to an abbreviated longitudinal direction is enabled to the base 32.

[0075]shortest distance [ lever / 31 / derivation ] La (refer to drawing 9) between the derivation projected part 33a and 33a -- the width W23 of the 2nd storage 200 -- abbreviated -- it is made the same. Therefore, when the 2nd storage 200 is inserted in the electrode holder 28, the sides 201b and 201b of the 2nd storage 200 contact or approach the derivation projected parts 33a and 33a of the derivation spring parts 33 and 33.

[0076]The terminal area 34 is formed in the front face of the base 32, and this terminal area 34 is constituted by the ten contact buttons 35 and 35 and ... The contact buttons 35 and 35 and ... are estranged and provided in a longitudinal direction at equal intervals, and the pitch is made the same as the pitch of the terminal electrodes 105 and 105 of the 1st storage 100 and the 2nd storage 200, ..., 205 and 205, and ... The contact buttons 35 and 35 and width in the longitudinal direction of ... are made smaller than the terminal electrodes 105 and 105, ..., 205 and 205, and the width in the longitudinal direction of ...

[0077]Elastic displacement of the contact button 35 is enabled to the base 32, and it comprises the base end 35a projected from the base 32, and the contact part 35b which are turned up from the tip of this base end 35a, inclines to the base end 35a, sees from the side, and succeeds in the shape of a V character (refer to drawing 10). Elastic displacement of the contact part 35b is enabled to the base end 35a.

[0078]The ten contact buttons 35 and 35 and the terminal area 34 constituted by ... are connected to the memory interface 18 (refer to drawing 7).

[0079]In the state where external force is not given, the derivation lever 31 is held with the spring 36 for neutrality in the center valve position to the electrode holder 28, i.e., the center in rotating extent, (refer to drawing 9).

[0080]As for the derivation lever 31, the rotation more than needed is regulated by the restriction projection 29a and 29a by which the base 32 was established in the base part 29 of the electrode holder 28. Therefore, in the rotating extent of the derivation lever 31, the front end P and P of the inclined planes 33b and 33b of the derivation projected parts 33a and 33a is not located inside the inner surfaces Q and Q of the guide wall parts 30a and 30a of the electrode holder 28, and is made (refer to drawing 11).

[0081]The loading mechanism 37 which carries out loading of the 1st storage 100 and 2nd storage 200 to the storage applied part 27 is constituted by the electrode holder 28, the derivation lever 31, and the terminal area 34 which were constituted as mentioned above.

[0082]Below, the loading operation of the loading mechanism 37 is explained (refer to drawing 12 thru/or drawing 21). The 1st storage 100 and 2nd storage 200 are inserted in the slot 4 by each from the polar-zone 102 and 202 side.

[0083]First, operation when the 1st storage 100 is inserted in the slot 4 of the outer case 2 is explained (refer to drawing 12 thru/or drawing 14).

[0084]If the 1st storage 100 is inserted in the slot 4, the sides 101b and 101b of the 1st storage 100 are shown at the guide wall parts 30a and 30a of the guide part 30 of the electrode holder 28, and are moved back (refer to drawing 12).

[0085]The inclined planes 33b and 33b of the derivation spring parts 33 and 33 of the derivation lever 31 \*\*\*\* to the 1st storage 100 moved back (refer to drawing 13). Since width W12 of the 1st storage 100 is made larger than the derivation projected part 33a and shortest distance La between 33a, elastic displacement of it is carried out in the direction which the derivation spring parts 33 and 33 estrange mutually with movement behind the 1st storage 100 (refer to drawing 14).

[0086]The 1st storage 100 is inserted between the derivation spring parts 33 and 33, and the terminal electrodes 105 and 105 and ... are connected to the contact buttons 35 and 35 and ... which are awaited, respectively (refer to drawing 14). The connected state in which the contact parts 35b and 35b and ... contact the terminal electrodes 105 and 105 and ... elastically and in which both contact buttons 35 and 35 and ... are positive since elastic displacement is possible is secured. The engagement piece 27a is engaging with the engagement groove 111 of the 1st storage 100 in the contact buttons 35 and 35 and the state where the terminal electrodes 105 and 105 and ... were connected to ..., respectively (refer to drawing 14).

[0087]By, for example, operating ejection \*\* which was provided in the outer case 2 and which is not illustrated, extraction from the slot 4 of the 1st storage 100 is performed, when the 1st storage 100 is discharged from the slot 4 by the ejecting mechanism which was established in the slot 4 and which is not illustrated. If the 1st storage 100 is taken out from the slot 4, the displaced derivation spring parts 33 and 33 will carry out elastic restoration, and will return to the original state.

[0088]Next, operation when the 2nd storage 200 is inserted in the slot 4 of the outer case 2 is explained (refer to drawing 15 thru/or drawing 21).

[0089]For example, if it is inserted in this slot 4 after the 2nd storage 200 has approached the left to the slot 4, the inclined plane 33b of the derivation spring part 33 on the left-hand side of the derivation lever 31 will \*\*\*\* to the 2nd storage 200 (refer to drawing 15).

[0090]The inclined plane 33b \*\*\*\*s, it is moved back, and the 2nd storage 200 rotates in the 31Rderivation lever 1 direction by the thrust to the inclined plane 33b of the 2nd storage 200 at this time (refer to drawing 16). Therefore, it is displaced in the contact buttons 35 and 35 and ... at the left side.

[0091]The 2nd storage 200 is inserted between the derivation spring parts 33 and 33, and the terminal electrodes 205 and 205 and ... are connected to the contact buttons 35 and 35 and ... which the rotation to 31Rderivation lever 1 direction is displaced at the left side, and are awaited, respectively (refer to drawing 17). The connected state in which the contact parts 35b and 35b and ... contact the terminal electrodes 205 and 205 and ... elastically and in which both contact buttons 35 and 35 and ... are positive since elastic displacement is possible is secured.

[0092]When the 1st storage 100 and 2nd storage 200 are inserted in the electrode holder 28, The position in the terminal electrodes 105 and 105 in the electrode holder 28, ... and the terminal electrodes 205 and 205, and a sliding direction with ... changes with both thickness W13 and differences in W23, Although the terminal electrodes 205 and 205 and ... are estranged below to the contact button 35 as compared with the terminal electrodes 105 and 105 and ..., This difference is absorbed by the amount of elastic displacement of the contact button 35, and the contact buttons 35 and 35 and ... are certainly connected also to any of the terminal electrodes 105 and 105, ... and the terminal electrodes 205 and 205, and ...

[0093]In the terminal electrodes 205 and 205 of the 2nd storage 200, and the state where ... was connected to the contact buttons 35 and 35 and ..., and the storage applied part 27 was equipped with the 2nd storage 200, the derivation lever 28 is held with the spring 36 for neutrality in a center valve position (refer to drawing 18). In the contact buttons 35 and 35 and the state where the terminal electrodes 205 and 205 and ... were connected to ..., respectively, it changes into the state where the left lateral 201b of the 2nd storage 200 touched the engagement piece 27a.

[0094]Like the case of the 1st storage 100, extraction from the slot 4 of the 2nd storage 200 is



performed, when discharged by the ejecting mechanism from the slot 4.

[0095]On the other hand, if it is inserted in this slot 4 after the 2nd storage 200 has visited the right direction to the slot 4, the inclined plane 33b of the derivation spring part 33 on the right-hand side of the derivation lever 31 will \*\*\*\* to the 2nd storage 200 (refer to drawing 19).

[0096]The inclined plane 33b \*\*\*\*s to the 2nd storage 200, it is moved back, and the electrode holder 28 rotates to R 2-way by the thrust to the inclined plane 33b of the 2nd storage 200 at this time (refer to drawing 20). Therefore, it is displaced in the contact buttons 35 and 35 and ... at the right direction side.

[0097]The 2nd storage 200 is inserted between the derivation spring parts 33 and 33, and the terminal electrodes 105 and 105 and ... are connected to the contact buttons 35 and 35 and ... which the rotation to R 2-way of the derivation lever 31 is displaced at the right direction side, and are awaited, respectively (refer to drawing 21). The connected state in which the contact parts 35b and 35b and ... contact the terminal electrodes 205 and 205 and ... elastically and in which both contact buttons 35 and 35 and ... are positive since elastic displacement is possible is secured.

[0098]In the terminal electrodes 205 and 205 of the 2nd storage 200, and the state where ... was connected to the contact buttons 35 and 35 and ..., and the storage applied part 27 was equipped with the 2nd storage 200, the derivation lever 28 is held with the spring 36 for neutrality in a center valve position. In the contact buttons 35 and 35 and the state where the terminal electrodes 205 and 205 and ... were connected to ..., respectively, it changes into the state where the left lateral 201b of the 2nd storage 200 touched the engagement piece 27a.

[0099]Like the case of the 1st storage 100, extraction from the slot 4 of the 2nd storage 200 is performed, when discharged by the ejecting mechanism from the slot 4.

[0100]If it is in the storage medium drive device 1 as indicated above, Since the terminal area 34 and the 2nd storage 200 are derived in the direction with which the contact buttons 35 and 35, ..., the terminal electrodes 205 and 205 and ... engage mutually by the derivation lever 31 when the 2nd storage 200 is inserted in the electrode holder 28, The storage applied part 27 can be equipped with the both sides of the 1st storage 100 and the 2nd storage 200, without using an adapter, and improvement in the user-friendliness by sharing of the slot 4 can be aimed at.

[0101]Since the detection means for detecting the difference in the size of the storage inserted in the slot 4 is not needed and the 1st storage 100 and the guide for every 2nd storage 200 are not needed, either, reduction of the manufacturing cost of the storage medium drive device 1 by the simplification of a mechanism can be aimed at.

[0102]If it is in the storage medium drive device 1, in order to form the terminal area 34 in the derivation lever 31 and to try to move the terminal area 34 to the derivation lever 31 and one, The link mechanism for operating the terminal area 34 with operation of the derivation lever 31 is unnecessary, and reduction of part mark can be aimed at, and improvement in reliability of operation can be aimed at.

[0103]Since the derivation spring parts 33 and 33 in which elastic displacement is possible are formed in the derivation lever 31, the terminal electrodes 105 and 105 and ... can derive the 1st storage 100 in the contact buttons 35 and 35 and the direction connected to ... certainly.

[0104]Since sharing of the slot 4 can be attained only by making the derivation lever 31 rotatable at the electrode holder 28, simplification of a mechanism can be attained.

[0105]Since the 1st storage 100 is guided at the electrode holder 28, the storage applied part 27 is equipped with it further again, the 2nd storage 200 is derived to the derivation lever 31 and the storage applied part 27 is equipped with it, The storage applied part 27 can be equipped with each of the 1st storage 100 and the 2nd storage 200 properly and certainly.

[0106]In addition, since it is certainly derived to one of the derivation spring parts 33 even if it is inserted in the slot 4, where which [ on either side ] side is approached the 2nd storage 200, it can connect certainly the contact buttons 35 and 35, ..., the terminal electrodes 205 and 205 and ...

[0107]Although the case where formed the spring 36 for neutrality and the derivation lever 31 was held in a center valve position above was shown, If it is in the loading mechanism 37, in the rotating extent of the derivation lever 31, as mentioned above The inclined plane 33b, Since the

front end P and P of 33b is not located inside the inner surfaces Q and Q of the guide wall parts 30a and 30a of the electrode holder 28 and is made (refer to drawing 11). Since the 1st storage 100 and 2nd storage 200 are always inserted between the derivation spring parts 33 and 33, it is not necessary to necessarily form the spring 36 for neutrality.

[0108]Next, the electrode holder 28, the electrode holder 28A which is the 1st modification of the derivation lever 31, and the derivation lever 31A are explained (refer to drawing 22 thru/or drawing 27). Since, as for the 1st modification shown below, it is only different that the derivation lever 31A is supported by the electrode holder 28A, enabling free movement to a longitudinal direction as compared with the electrode holder 28 and the derivation lever 31, Only a different portion as compared with the electrode holder 28 and the derivation lever 31 is explained to details, the same numerals as the numerals given to the same portion in the electrode holder 28 and the derivation lever 31 about other portions are attached, and explanation is omitted.

[0109]It estranges right and left and the holding pins 28a and 28a are formed in the position of back end slippage of the electrode holder 28A (refer to drawing 22). The restriction projection 29a and 29a provided in the above-mentioned electrode holder 28 is not formed in the electrode holder 28A.

[0110]The derivation spring parts 33 and 33 projected to the abbreviated front are formed in one, and the derivation lever 31A comprises the both-the-right-and-left-ends part of the base 32A and this base 32A. In the base 32A, estrange at right and left, and the long supported holes 32b and 32b are formed in a longitudinal direction, The holding pins 28a and 28a of the electrode holder 28A are inserted in these supported holes 32b and 32b, and the derivation lever 31A is supported by the electrode holder 28A, enabling free movement to a longitudinal direction, i.e., the S1-S 2-way shown in drawing 22, (refer to drawing 22). The ten contact buttons 35 and 35 and the terminal area 34 which comprises ... are formed in the front face of the base 32A.

[0111]The loading mechanism 38 which carries out loading of the 1st storage 100 and 2nd storage 200 is constituted by the electrode holder 28A, the derivation lever 31A, and the terminal area 34 which were constituted as mentioned above.

[0112]Below, the loading operation of the loading mechanism 38 is explained (refer to drawing 23 thru/or drawing 27).

[0113]Like [ when the 1st storage 100 is inserted in the slot 4 of the outer case 2 ] the case where it is the loading mechanism 37, The 1st storage 100 is inserted between the derivation spring parts 33 and 33 by which elastic displacement is carried out, and the terminal electrodes 105 and 105 and ... are connected to the contact buttons 35 and 35 and ... which are awaited, respectively (refer to drawing 23).

[0114]If it is inserted in this slot 4 after the 2nd storage 200 has approached the left to the slot 4 of the outer case 2, The inclined plane 33b of the derivation spring part 33 on the left-hand side of the derivation lever 31 \*\*\*\*s, it is moved back, and the 2nd storage 200 is moved in the ASelectrode-holder 281 direction by the thrust to the inclined plane 33b of the 2nd storage 200 at this time (refer to drawing 24). Therefore, it is displaced in the contact buttons 35 and 35 and ... at the left side.

[0115]The 2nd storage 200 is inserted between the derivation spring parts 33 and 33, and the terminal electrodes 205 and 205 and ... are connected to the contact buttons 35 and 35 and ... which movement in ASelectrode-holder 281 direction is displaced at the left side, and are awaited, respectively (refer to drawing 25).

[0116]On the other hand, if it is inserted in this slot 4 after the 2nd storage 200 has visited the right direction to the slot 4 of the outer case 2, The inclined plane 33b of the derivation spring part 33 on the right-hand side of the derivation lever 31 \*\*\*\*s to the 2nd storage 200, it is moved back, and the electrode holder 28A is moved to S 2-way by the thrust to the inclined plane 33b of the 2nd storage 200 at this time (refer to drawing 26). Therefore, it is displaced in the contact buttons 35 and 35 and ... at the right direction side.

[0117]The 2nd storage 200 is inserted between the derivation spring parts 33 and 33, and the terminal electrodes 205 and 205 and ... are connected to the contact buttons 35 and 35 and ... which movement to S 2-way of the electrode holder 28A is displaced at the right direction side, and are awaited, respectively (refer to drawing 27).

[0118]If it is in the loading mechanism 38 as indicated above, Since the derivation lever 31A is moved to the arrangement direction of the terminal electrodes 105 and 105 of the 1st storage 100 and the 2nd storage 200 inserted in the electrode holder 28A, ..., 205 and 205, and ..., Connection with the contact buttons 35 and 35, ..., the terminal electrodes 105 and 105 and ... or the terminal electrodes 205 and 205, and ... can be ensured.

[0119]Since it is certainly derived to one of the derivation spring parts 33 even if it is inserted in the slot 4, where which [ on either side ] side is approached the 2nd storage 200, it can connect certainly the contact buttons 35 and 35, ..., the terminal electrodes 205 and 205 and ...

[0120]Even if it is in the loading mechanism 38, the spring for neutrality for making the derivation lever 31A hold in a center valve position may be provided.

[0121]Next, the derivation lever 31B which is the 2nd modification of the derivation lever 31 is explained (refer to drawing 28 thru/or drawing 36). Since it is only different that the 2nd modification shown below is supported as compared with the derivation lever 31, enabling free rotation of the derivation lever 31B which has only the one derivation spring part 33 in the electrode holder 28, Only a different portion as compared with the derivation lever 31 is explained to details, the same numerals as the numerals given to the same portion in the derivation lever 31 about other portions are attached, and explanation is omitted.

[0122]The derivation spring part 33 projected to the abbreviated front is formed in one, and the derivation lever 31B comprises either of the both-the-right-and-left-ends parts of the base 32 and this base 32, for example, a right end section, (refer to drawing 28).

[0123]In the base 32, the rotating shaft part 32a is supported by the base part 29 of the electrode holder 28, enabling free rotation.

[0124]The derivation lever 31B is energized in the R1 direction with the extension spring 39 stretched between the base 32 and the spring supporter which was formed in the storage applied part 27, and which are not illustrated (refer to drawing 28). Therefore, in the state where external force is not given to the derivation lever 31B, the rotation to R1 direction is regulated in contact with the restriction projection 29b of the left-hand side where the base 32 was established in the base part 29. In the state where the rotation to BRderivation lever 311 direction was regulated, the front end of the inclined plane 33b of the derivation spring part 33 is located [ the position of the right behind of the inner surface of the guide wall part 30a of the electrode holder 28, or / its ] in right-hand side whether it is small (refer to drawing 28).

[0125]The loading mechanism 40 which carries out loading of the 1st storage 100 and 2nd storage 200 is constituted by the electrode holder 28, the derivation lever 31B, and the terminal area 34 which were constituted as mentioned above.

[0126]Below, the loading operation of the loading mechanism 40 is explained (refer to drawing 29 thru/or drawing 36).

[0127]If the 1st storage 100 is inserted in the slot 4, the sides 101b and 101b of the 1st storage 100 are shown at the guide wall parts 30a and 30a of the guide part 30 of the electrode holder 28, and are moved back (refer to drawing 29).

[0128]The inclined plane 33b of the derivation spring part 33 of the derivation lever 31B \*\*\*\*s to the 1st storage 100 moved back (refer to drawing 30). If the 1st storage 100 is moved back, by the thrust to the inclined plane 33b of the 1st storage 100, the derivation lever 31B will resist the spring force of the extension spring 39, and it will rotate to R 2-way (refer to drawing 31). Therefore, it is displaced in the contact buttons 35 and 35 and ... at the right direction side.

[0129]When the 1st storage 100 is inserted in the electrode holder 28, rotate the derivation lever 31B to the rotation end in R 2-way, but. In this rotation end, Chuo Line Pm in the longitudinal direction of the terminal area 34 is slightly come together and located in the right direction to Chuo Line P1 in the longitudinal direction of the polar zone 102 of the 1st storage 100 (refer to drawing 31).

[0130]The terminal electrodes 105 and 105 and ... are connected to the contact buttons 35 and 35 and ... which are displaced at the right direction side and awaited by moving the 1st storage 100 back further, respectively (refer to drawing 32). Although Chuo Line Pm in the longitudinal direction of the terminal area 34 is slightly come together and located in the right direction to Chuo Line P1 in the longitudinal direction of the polar zone 102 of the 1st storage 100 at this

time, Since the contact buttons 35 and 35 and width in the longitudinal direction of ... are made smaller than the terminal electrodes 105 and 105 and the width in the longitudinal direction of ... as described above, The difference of Chuo Line Pm and Chuo Line P1 is absorbed by the difference of the contact buttons 35 and 35, the width in the longitudinal direction of ..., and the width in the terminal electrodes 105 and 105 and the longitudinal direction of ..., and the terminal electrodes 105 and 105 and ... are properly connected to the contact buttons 35 and 35 and ..., respectively.

[0131]The engagement piece 27a is engaging with the engagement groove 111 of the 1st storage 100 in the contact buttons 35 and 35 and the state where the terminal electrodes 105 and 105 and ... were connected to ..., respectively (refer to drawing 32).

[0132]If it is inserted in this slot 4 after the 2nd storage 200 has approached the left to the slot 4, the 2nd storage 200 is back moved through the left-hand side of the inclined plane 33b of the derivation spring part 33 (refer to drawing 33).

[0133]Since the engagement groove where the engagement piece 27a is inserted in the 2nd storage 200 is not formed, The engagement piece 27a \*\*\*\*\* to the 2nd storage 200, approaching \*\*\*\*\*, it is moved back and the terminal electrodes 205 and 205 and ... are connected to the contact buttons 35 and 35 and ... which are awaited, respectively (refer to drawing 34). Although Chuo Line Pm in the longitudinal direction of the terminal area 34 is slightly come together and located in the left to Chuo Line P2 in the longitudinal direction of the polar zone 202 of the 2nd storage 200 at this time, Since the contact buttons 35 and 35 and width in the longitudinal direction of ... are made smaller than the terminal electrodes 205 and 205 and the width in the longitudinal direction of ... as described above, The difference of Chuo Line Pm and Chuo Line P2 is absorbed by the difference of the contact buttons 35 and 35, the width in the longitudinal direction of ..., and the width in the terminal electrodes 205 and 205 and the longitudinal direction of ..., and the terminal electrodes 205 and 205 and ... are properly connected to the contact buttons 35 and 35 and ..., respectively.

[0134]On the other hand, if it is inserted in this slot 4 after the 2nd storage 200 has visited the right direction to the slot 4, the inclined plane 33b of the derivation spring part 33 of the derivation lever 31B will \*\*\*\* to the 2nd storage 200.

[0135]The inclined plane 33b \*\*\*\*\* to the 2nd storage 200, it is moved back, and the derivation lever 31B rotates to R 2-way by the thrust to the inclined plane 33b of the 2nd storage 200 at this time (refer to drawing 35). Therefore, it is displaced in the contact buttons 35 and 35 and ... at the right direction side.

[0136]The terminal electrodes 205 and 205 and ... are connected to the contact buttons 35 and 35 and ... for which the rotation to R 2-way of the derivation lever 31B is displaced at the right direction side and which are awaiting the 2nd storage 200, respectively (refer to drawing 36). Although Chuo Line Pm in the longitudinal direction of the terminal area 34 is slightly come together and located in the left to Chuo Line P2 in the longitudinal direction of the polar zone 202 of the 2nd storage 200 at this time, Since the contact buttons 35 and 35 and width in the longitudinal direction of ... are made smaller than the terminal electrodes 205 and 205 and the width in the longitudinal direction of ... as described above, The difference of Chuo Line Pm and Chuo Line P2 is absorbed by the difference of the contact buttons 35 and 35, the width in the longitudinal direction of ..., and the width in the terminal electrodes 205 and 205 and the longitudinal direction of ..., and the terminal electrodes 205 and 205 and ... are properly connected to the contact buttons 35 and 35 and ..., respectively.

[0137]Since the derivation lever 31B is constituted by only the derivation spring part 33 of the bases 32 and 1 if it is in the loading mechanism 40 as indicated above, much more simplification of a mechanism can be attained.

[0138]The derivation spring part 33 of the above-mentioned derivation lever 31B may be formed as a flare portion which does not have the spring nature which is not displaced to the base 32 in the derivation spring part 33, although elastic displacement is enabled to the base 32.

[0139]Although the derivation lever 31B supported enabling rotation free as the 2nd modification of the derivation lever 31 in the electrode holder 28 was explained to the above, As the 3rd modification, it may replace with the derivation lever 31B, and the derivation lever 31C made

movable to the electrode holder 28 in the longitudinal direction may be formed like the derivation lever 31A (refer to drawing 37).

[0140]The derivation spring part 33 projected to the abbreviated front is formed in one, and the derivation lever 31C comprises either of the both-the-right-and-left-ends parts of the base 32C and this base 32C, for example, a right end section. In the base 32C, it estranges at right and left, the long supported holes 32c and 32c are formed in a longitudinal direction, the holding pins 28a and 28a of the electrode holder 28A are inserted in these supported holes 32c and 32c, and the derivation lever 31C is supported by the electrode holder 28A, enabling free movement to a longitudinal direction. The terminal area 34 is formed in the front face of the base 32C of the derivation lever 31C.

[0141]The derivation lever 31C is energized in the S1 direction with the extension spring 41 stretched between the base 32C and the spring supporter which was formed in the storage applied part 27, and which are not illustrated. Therefore, the base 32C is located in the move end by the side of a left in the state where external force is not given to the derivation lever 31C.

[0142]The loading mechanism 42 which carries out loading of the 1st storage 100 and 2nd storage 200 is constituted by the electrode holder 28A, the derivation lever 31C, and the terminal area 34 which were constituted as mentioned above.

[0143]Since operation of the loading mechanism 42 only replaces operation [ in / in the rotational operation in the R1-R 2-way of the derivation lever 31B / the S1-S 2-way of the derivation lever 31C ] in operation of the loading mechanism 40, explanation is omitted.

[0144]If it is in the loading mechanism 42 as indicated above, Since the derivation lever 31C is constituted by only the derivation spring part 33 of the bases 32C and 1, Since slide operation of the terminal area 34 which could attain much more simplification of the mechanism and was provided in the derivation lever 31C is carried out to the arrangement direction of the terminal electrodes 105 and 105, ..., 205 and 205, and ..., Connection with the contact buttons 35 and 35, ..., the terminal electrodes 105 and 105 and ... or the terminal electrodes 205 and 205, and ... can be ensured.

[0145]Each shape and structures of each part which were shown in the above-mentioned embodiment are only what showed a mere example of the embodiment for operation of this invention, and the technical scope of this invention is not restrictively interpreted by these.

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[Translation done.]

\* NOTICES \*

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- 2.\*\*\*\* shows the word which can not be translated.
- 3.In the drawings, any words are not translated.

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## DESCRIPTION OF DRAWINGS

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### [Brief Description of the Drawings]

[Drawing 1]An embodiment of the invention is shown with drawing 2 thru/or drawing 37, and this figure is an expansion perspective view showing the 1st storage with which a storage medium drive device is equipped.

[Drawing 2]It is an expansion perspective view showing the 2nd storage with which a storage medium drive device is equipped.

[Drawing 3]It is a key map showing the electrode structure of a storage.

[Drawing 4]It is a key map showing the internal structure and electrode structure of a storage.

[Drawing 5]It is a key map showing the interface composition of a storage medium drive device and a storage.

[Drawing 6]It is an outline perspective view of a storage medium drive device.

[Drawing 7]It is a block diagram showing the circuitry of a storage medium drive device.

[Drawing 8]It is an expansion perspective view showing a loading mechanism with a storage.

[Drawing 9]It is an enlarged plan view showing the relation of the size of an derivation lever and a storage.

[Drawing 10]It is an enlarged vertical longitudinal sectional view of a loading mechanism.

[Drawing 11]It is an enlarged plan view showing the rotating extent to the electrode holder of an derivation lever.

[Drawing 12]Operation of a loading mechanism is shown with drawing 13 thru/or drawing 21, and this figure is an enlarged plan view showing the state immediately after inserting the 1st storage in an electrode holder.

[Drawing 13]The 1st storage is an enlarged plan view showing the state where the inclined plane of the derivation lever \*\*\*\*s.

[Drawing 14]It is an enlarged plan view showing the state where the storage applied part was equipped with the 1st storage.

[Drawing 15]It is an enlarged plan view showing the state where are inserted in an electrode holder after the 2nd storage has approached the left, and the inclined plane of the derivation lever \*\*\*\*s.

[Drawing 16]It is an enlarged plan view showing the state where the derivation lever rotated in the R1 direction following on drawing 15.

[Drawing 17]It is an enlarged plan view showing the state where the terminal electrode of the 2nd storage was connected to the contact button following on drawing 16.

[Drawing 18]It is an enlarged plan view showing the state where the derivation lever returned to the center valve position following on drawing 17.

[Drawing 19]It is an enlarged plan view showing the state where are inserted in an electrode holder after the 2nd storage has visited the right direction, and the inclined plane of the derivation lever \*\*\*\*s.

[Drawing 20]It is an enlarged plan view showing the state where the derivation lever rotated to R 2-way following on drawing 19.

[Drawing 21]It is an enlarged plan view showing the state where the terminal electrode of the 2nd storage was connected to the contact button following on drawing 20.

[Drawing 22]The 1st modification is shown with drawing 23 thru/or drawing 27, and this figure is an enlarged plan view of a loading mechanism.

[Drawing 23]It is an enlarged plan view showing the state where the storage applied part was equipped with the 1st storage.

[Drawing 24]It is an enlarged plan view showing the state where were inserted in the electrode holder after the 2nd storage had approached the left, and the derivation lever was moved in the S1 direction.

[Drawing 25]It is an enlarged plan view showing the state where the storage applied part was equipped with the 2nd storage following on drawing 24.

[Drawing 26]It is an enlarged plan view showing the state where were inserted in the electrode holder after the 2nd storage had visited the right direction, and the derivation lever was moved to S 2-way.

[Drawing 27]It is an enlarged plan view showing the state where the storage applied part was equipped with the 2nd storage following on drawing 26.

[Drawing 28]The 2nd modification is shown with drawing 29 thru/or drawing 36, and this figure is an enlarged plan view of a loading mechanism.

[Drawing 29]It is an enlarged plan view showing the state immediately after inserting the 1st storage in an electrode holder.

[Drawing 30]The 1st storage is an enlarged plan view showing the state where the inclined plane of the derivation lever \*\*\*\*s.

[Drawing 31]It is an enlarged plan view showing the state where the derivation lever resisted the spring force of the extension spring following on drawing 30, and it rotated to R 2-way.

[Drawing 32]It is an enlarged plan view showing the state where the storage applied part was equipped with the 1st storage following on drawing 31.

[Drawing 33]It is an enlarged plan view showing the state where the 2nd storage is inserted in an electrode holder where a left is approached, and it is back moved through the left-hand side of an derivation spring part.

[Drawing 34]It is an enlarged plan view showing the state where the storage applied part was equipped with the 2nd storage following on drawing 33.

[Drawing 35]It is an enlarged plan view showing the state where it was inserted in the electrode holder after the 2nd storage had visited the right direction, and the derivation lever rotated to R 2-way.

[Drawing 36]It is an enlarged plan view showing the state where the storage applied part was equipped with the 2nd storage following on drawing 35.

[Drawing 37]It is an enlarged plan view of a loading mechanism showing the 3rd modification.

[Description of Notations]

1 [ -- Derivation spring part, ] -- A storage medium drive device, 28 -- An electrode holder, 31 -- An derivation lever, 33 34 [ -- Electrode holder, ] -- A terminal area, 35 -- A contact button, 37 -- A loading mechanism, 28A 31A -- An derivation lever, 38 -- A loading mechanism, 31B -- Derivation lever, 40 [ -- The 1st storage, 101 / -- A case, 105 / -- A terminal electrode, 113 / -- Semiconductor memory, 200 / -- The 2nd storage, 201 / -- A case, 205 / -- A terminal electrode, 213 / -- Semiconductor memory ] -- A loading mechanism, 31C -- An derivation lever, 42 -- A loading mechanism, 100

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[Translation done.]

## \* NOTICES \*

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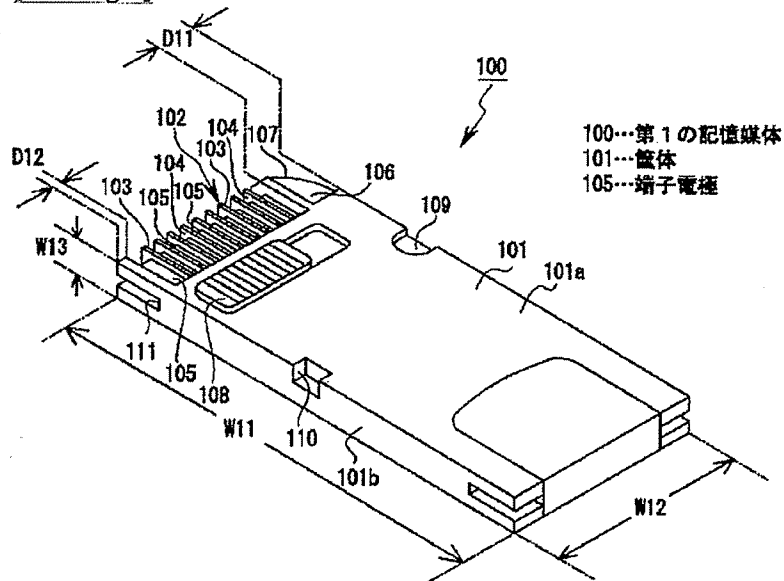
1.This document has been translated by computer. So the translation may not reflect the original precisely.

2.\*\*\*\* shows the word which can not be translated.

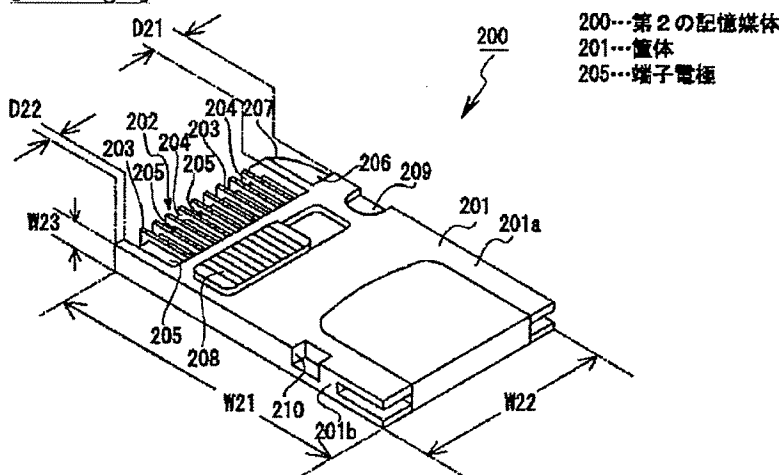
3.In the drawings, any words are not translated.

## DRAWINGS

[Drawing 1]

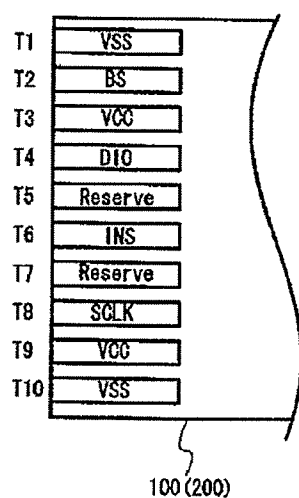


[Drawing 2]



[Drawing 3]

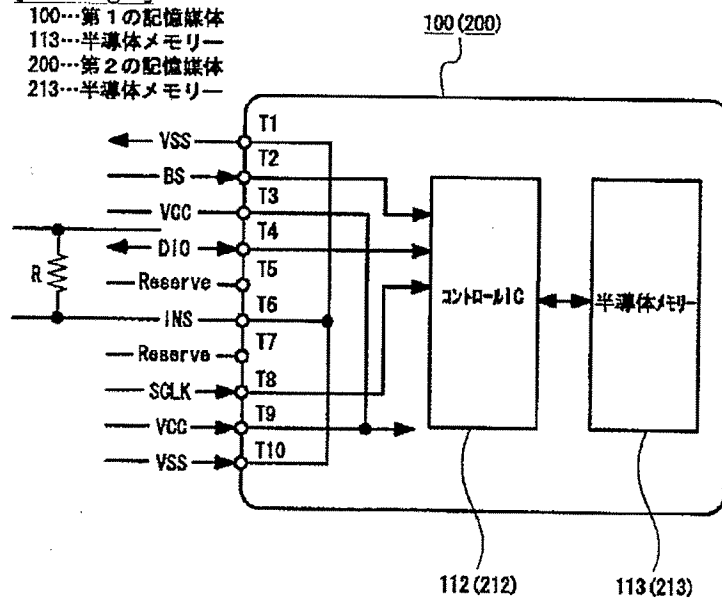




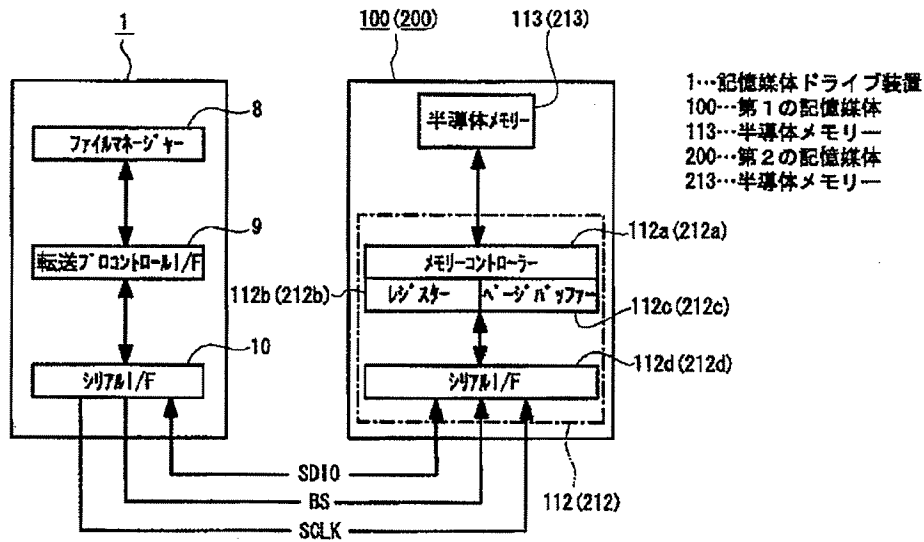
100...第1の記憶媒体  
200...第2の記憶媒体

[Drawing 4]

100...第1の記憶媒体  
113...半導体メモリ  
200...第2の記憶媒体  
213...半導体メモリ

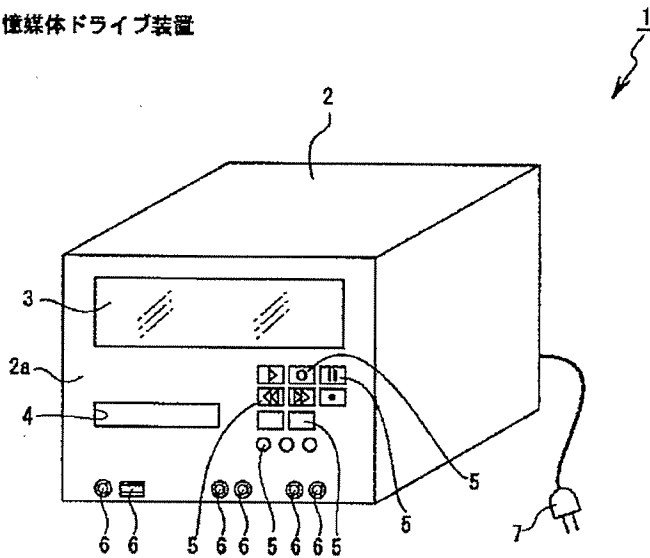


[Drawing 5]

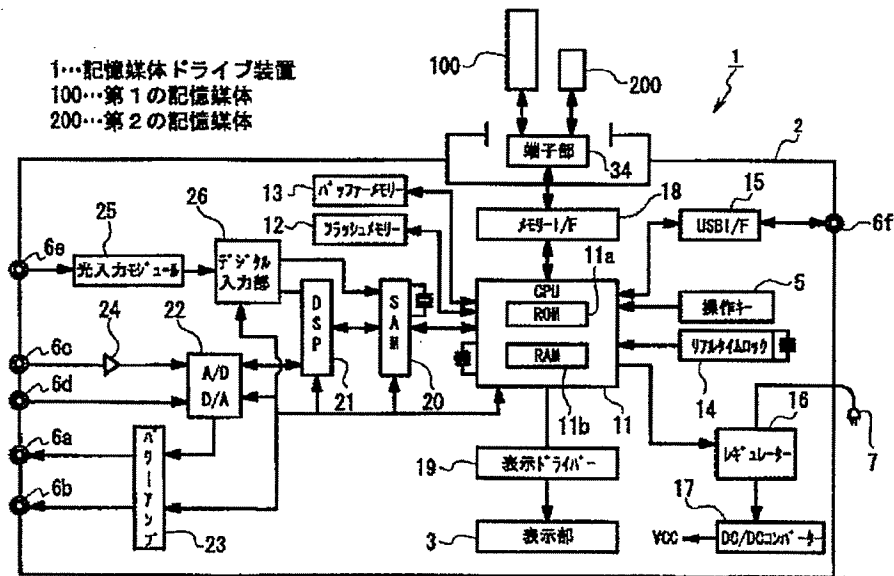


[Drawing 6]

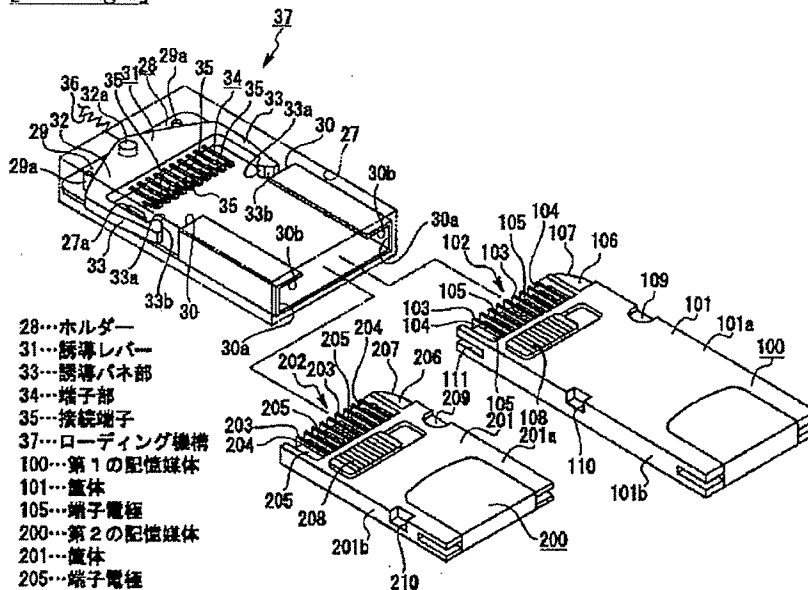
1...記憶媒体ドライブ装置



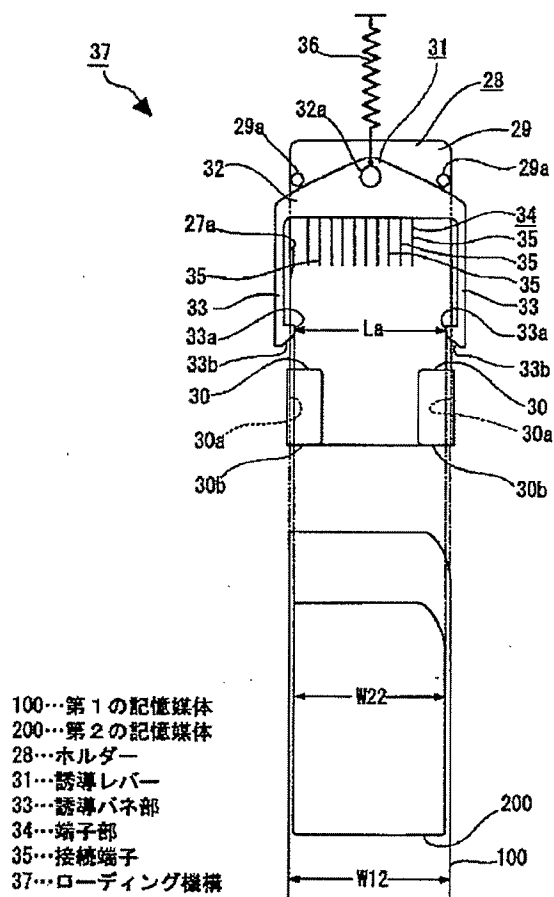
[Drawing 7]



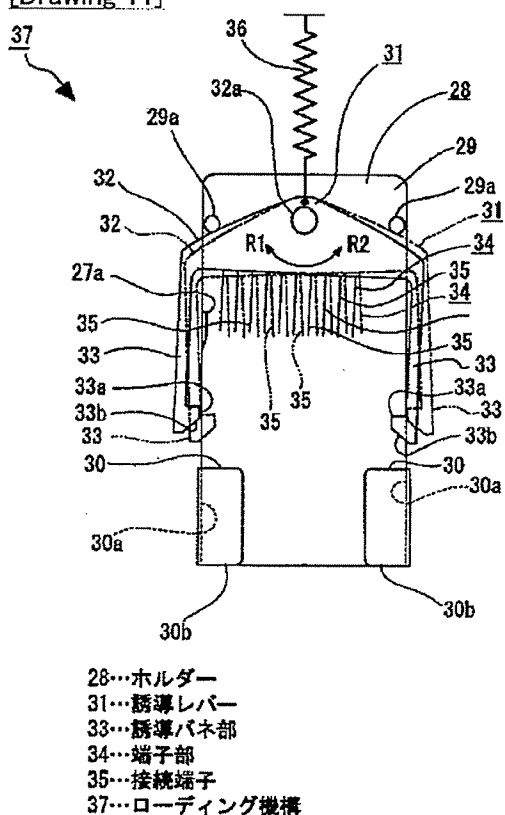
[Drawing 8]



[Drawing 9]

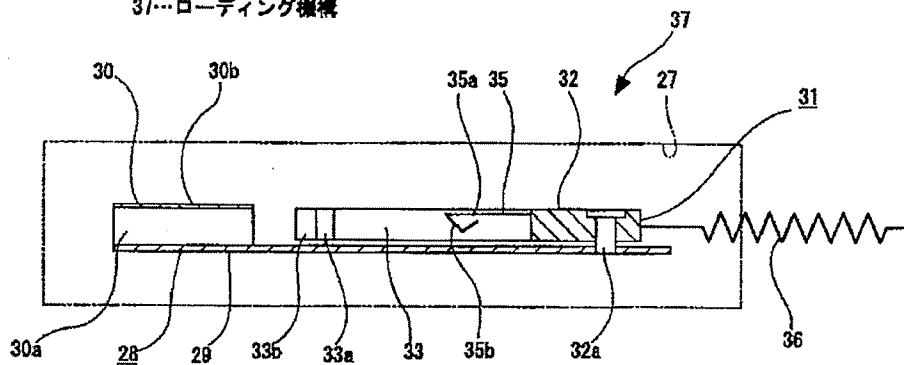


[Drawing 11]

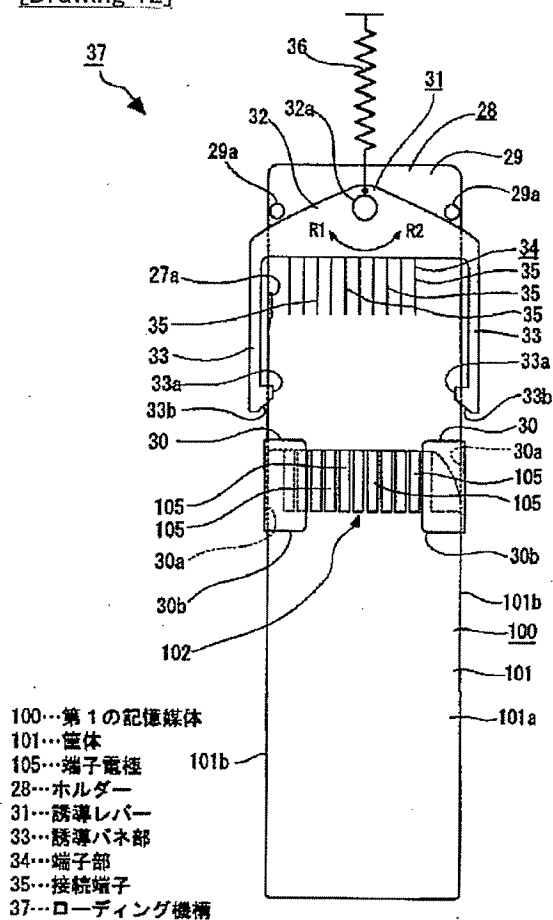


[Drawing 10]

28…ホルダー  
 31…誘導レバー  
 33…誘導バネ部  
 35…接続端子  
 37…ローディング機構

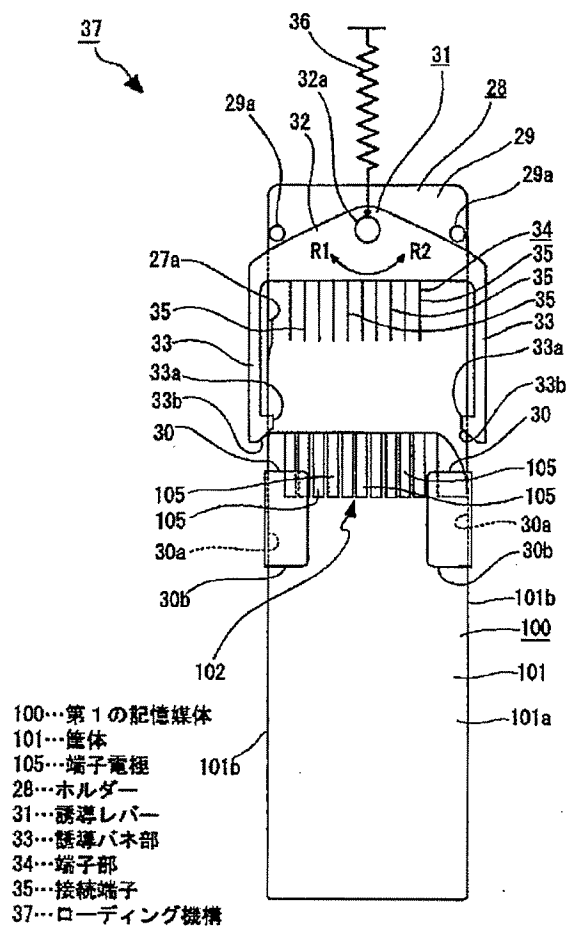


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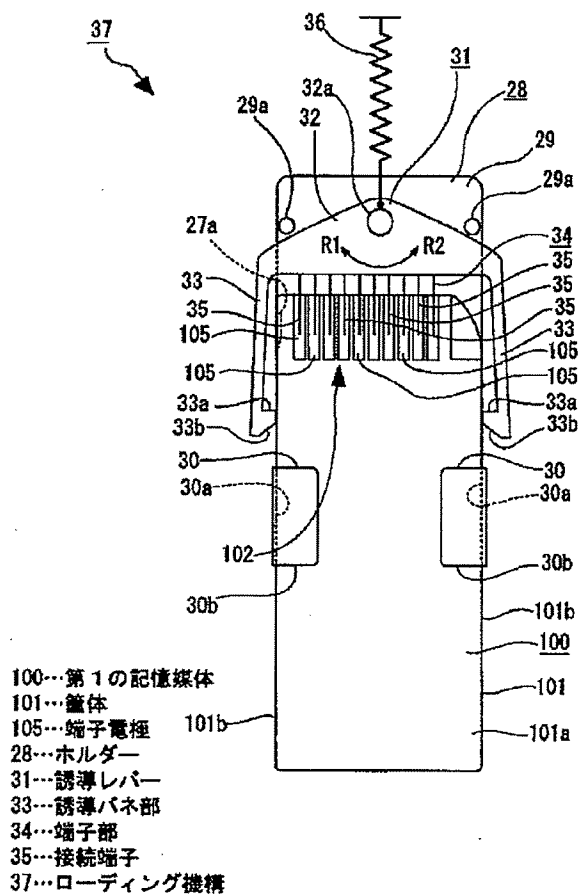


100…第1の記憶媒体  
 101…筐体  
 105…端子電極  
 28…ホルダー  
 31…誘導レバー  
 33…誘導バネ部  
 34…端子部  
 35…接続端子  
 37…ローディング機構

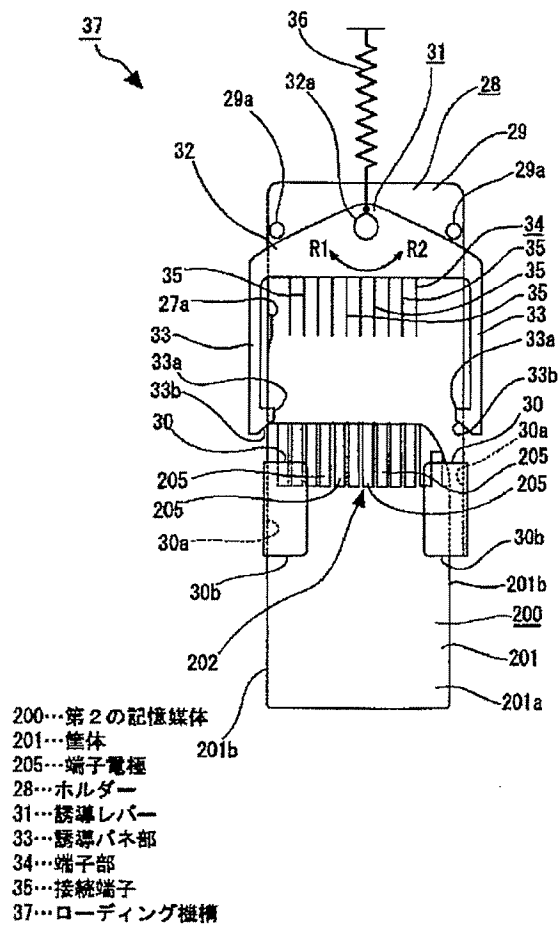
[Drawing 13]



[Drawing 14]

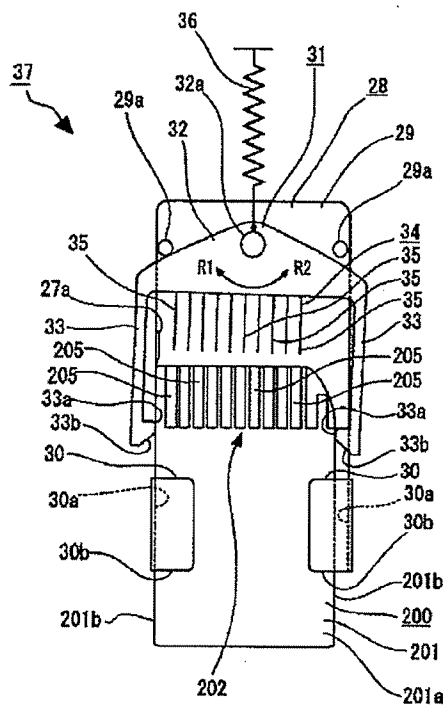


[Drawing 15]



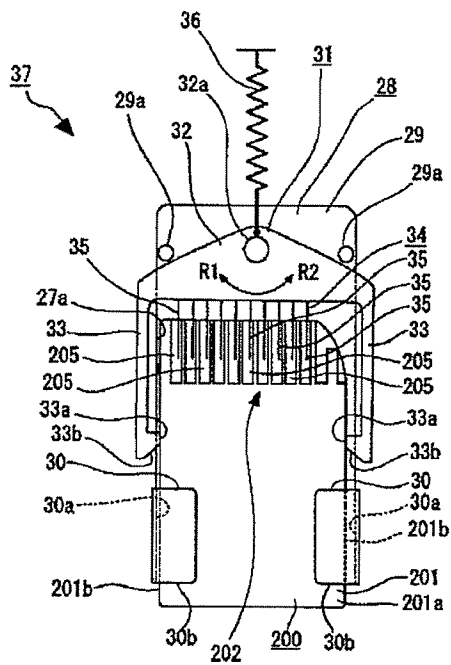
[Drawing 16]





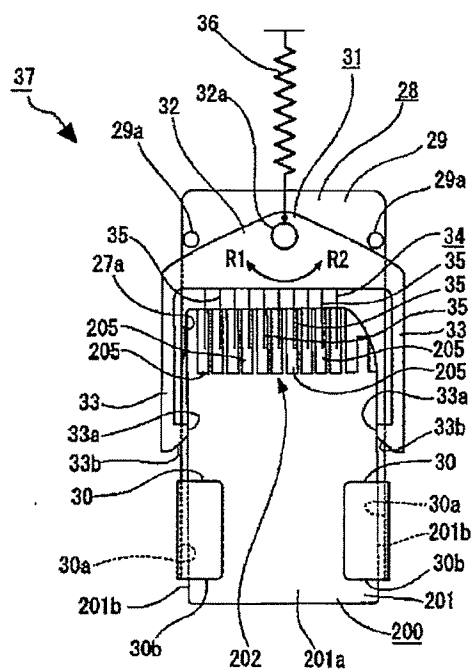
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201…筐体  
205…端子電極  
28…ホルダー  
31…誘導レバー  
33…誘導バネ部  
34…端子部  
35…接続端子  
37…ローディング機構

[Drawing 17]



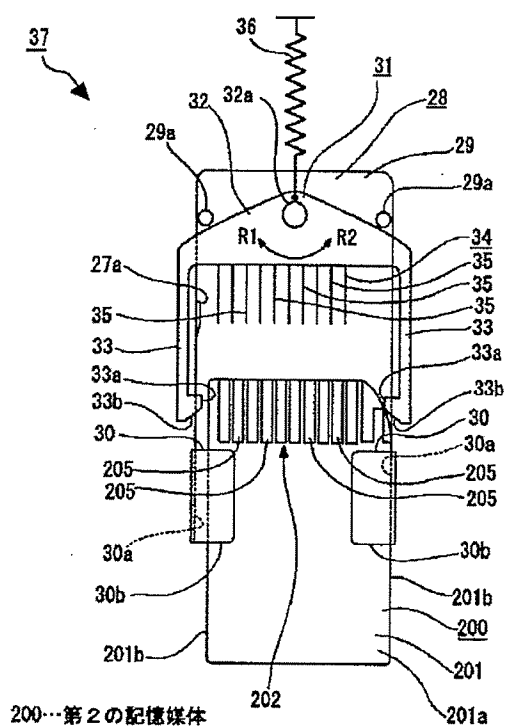
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 201...筐体  
 205...端子電極  
 28...ホルダー  
 31...誘導レバー  
 33...誘導バネ部  
 34...端子部  
 35...接続端子  
 37...ローディング機構

[Drawing 18]



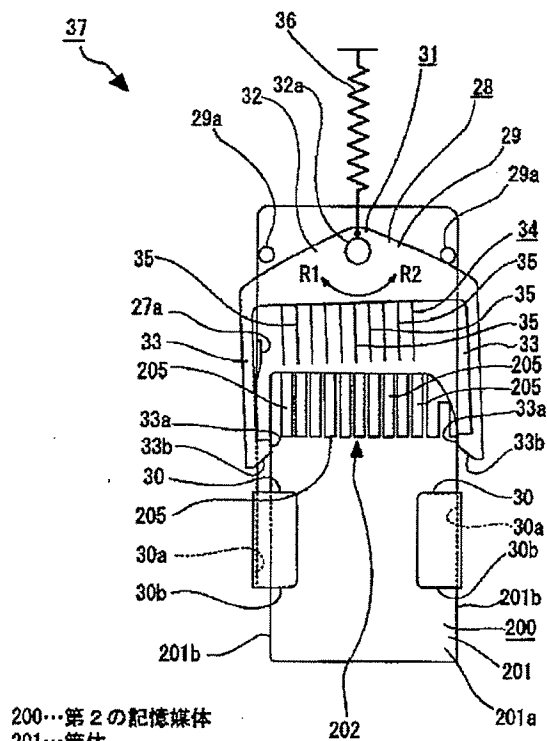
- 200...第2の記憶媒体
- 201...筐体
- 205...端子電極
- 28...ホルダー
- 31...誘導レバー
- 33...誘導バネ部
- 34...端子部
- 35...接続端子
- 37...ローディング機構

[Drawing 19]

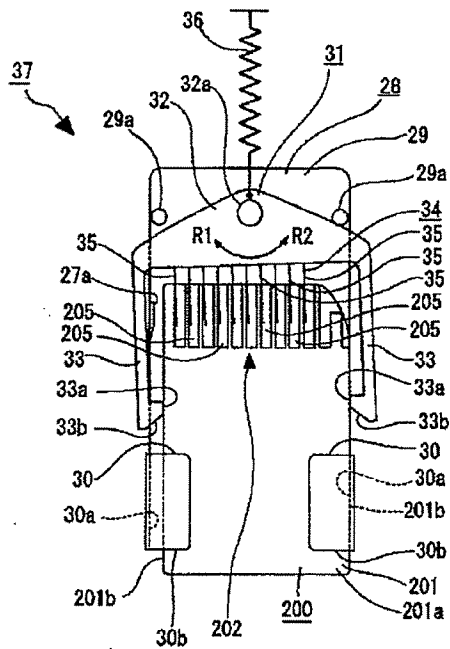


- 200…第2の記憶媒体
- 201…筐体
- 205…端子電極
- 28…ホルダー
- 31…誘導レバー
- 33…誘導バネ部
- 34…端子部
- 35…接続端子
- 37…ローディング機構

[Drawing 20]

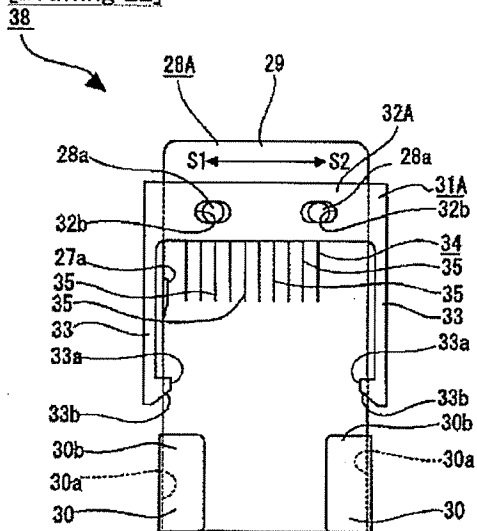


[Drawing 21]



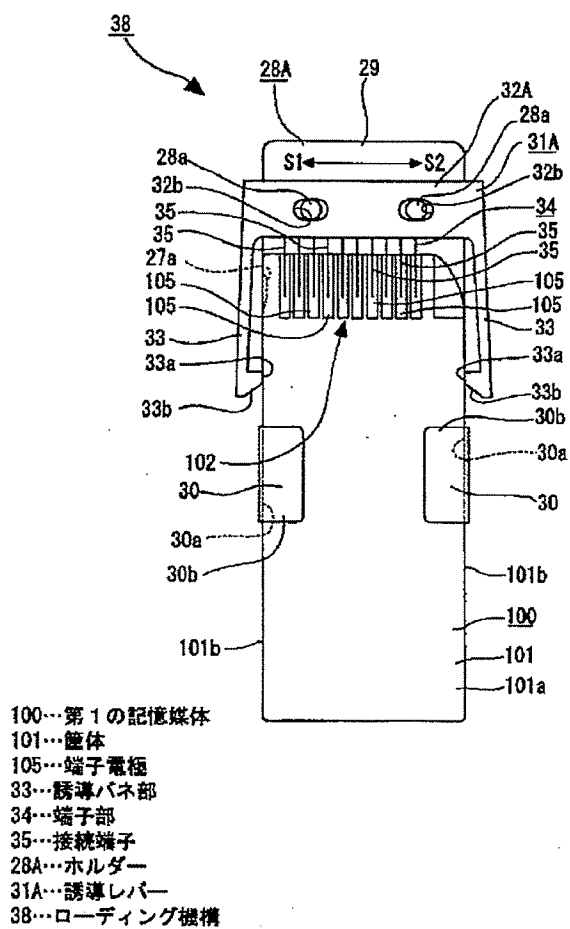
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 201...筐体  
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 28...ホルダー  
 31...誘導レバー  
 33...誘導バネ部  
 34...端子部  
 35...接続端子  
 37...ローディング機構

[Drawing 22]

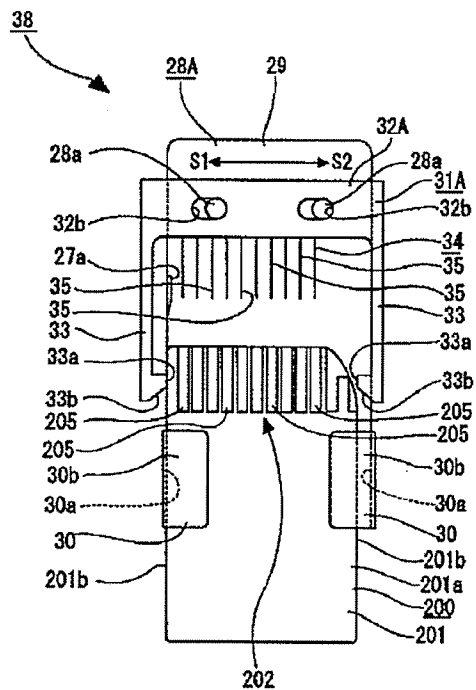


- 33...誘導バネ部  
 34...端子部  
 35...接続端子  
 28A...ホルダー  
 31A...誘導レバー  
 38...ローディング機構

[Drawing 23]



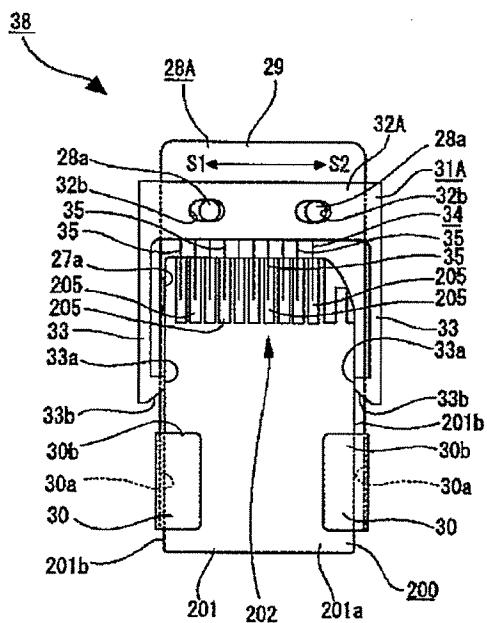
[Drawing 24]



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 201...筐体  
 205...端子電極  
 33...誘導パネ部  
 34...端子部  
 35...接続端子  
 28A...ホルダー  
 31A...誘導レバー  
 38...ローディング機構

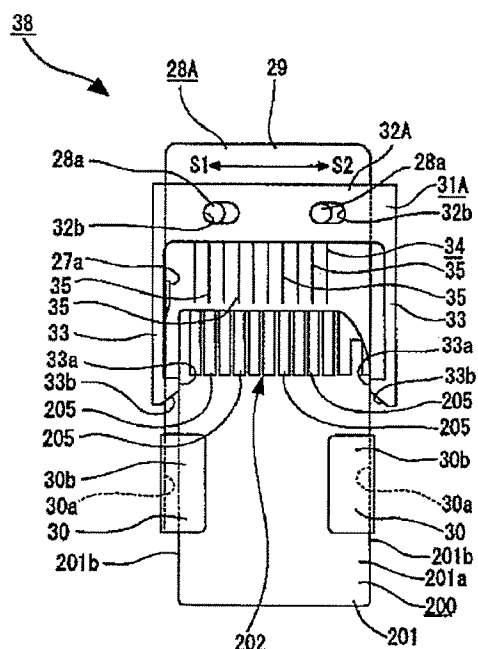
[Drawing 25]





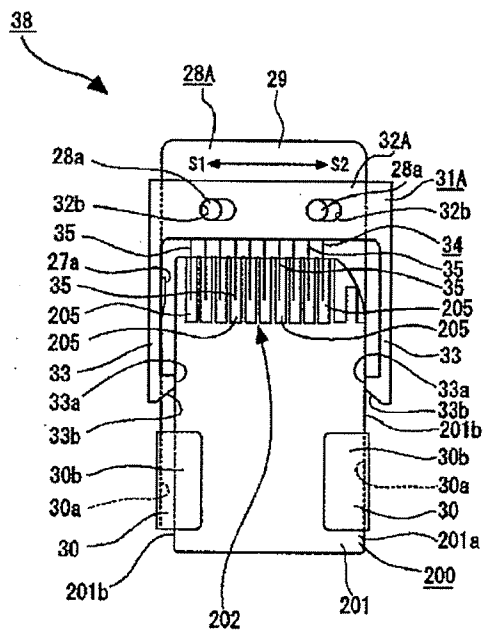
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 201...筐体  
 205...端子電極  
 33...誘導バネ部  
 34...端子部  
 35...接続端子  
 28A...ホルダー  
 31A...誘導レバー  
 38...ローディング機構

[Drawing 26]



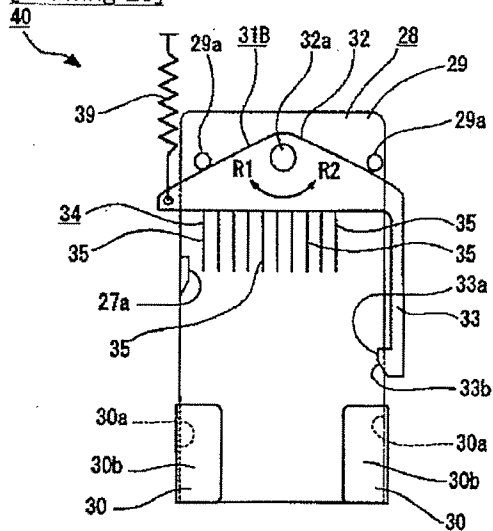
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 201...筐体  
 205...端子電極  
 33...誘導バネ部  
 34...端子部  
 35...接続端子  
 28A...ホルダー  
 31A...誘導レバー  
 38...ローディング機構

[Drawing 27]



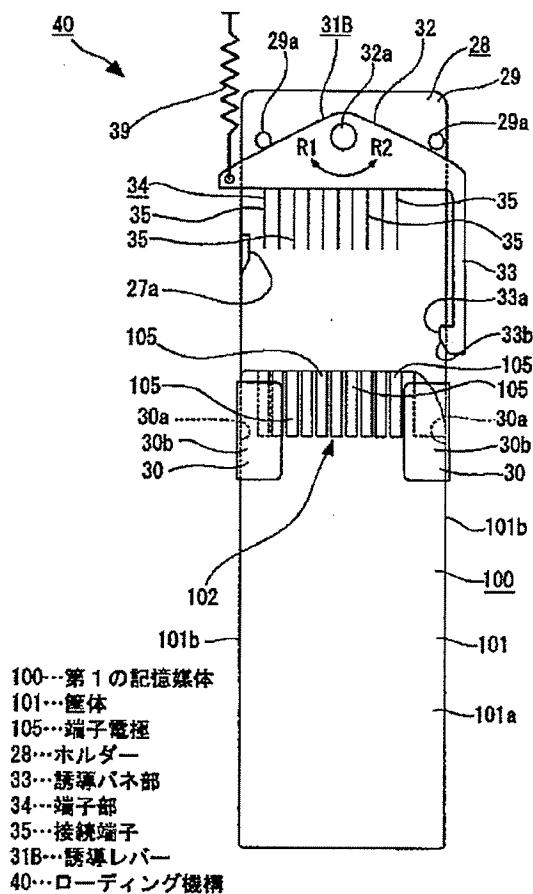
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- 201…筐体
- 205…端子電極
- 33…誘導パネ部
- 34…端子部
- 35…接続端子
- 28A…ホルダー
- 31A…誘導レバー
- 38…ローディング機構

[Drawing 28]

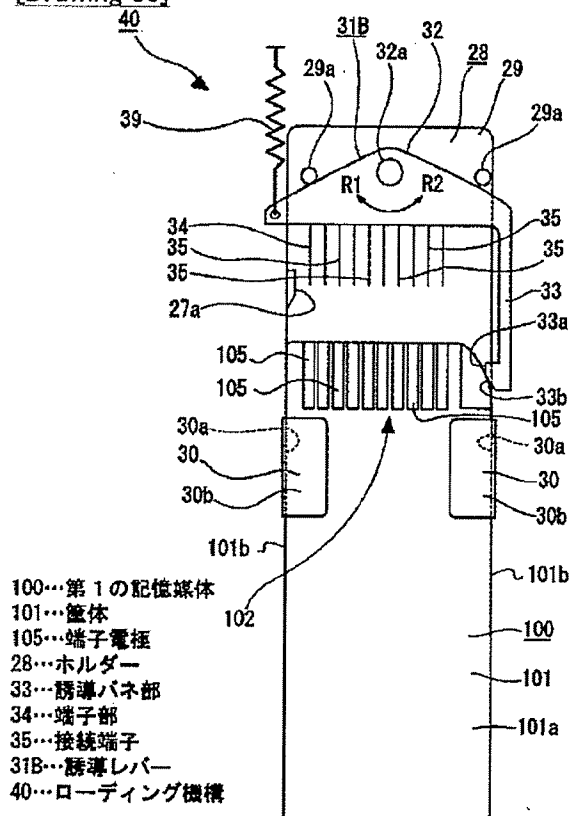


- 28…ホルダー  
33…誘導バネ部  
34…端子部  
35…接続端子  
31B…誘導レバー  
40…ローディング機構

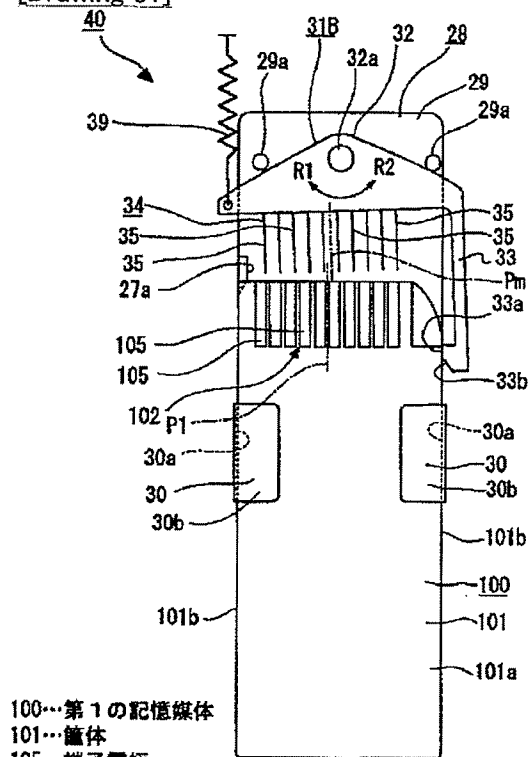
[Drawing 29]



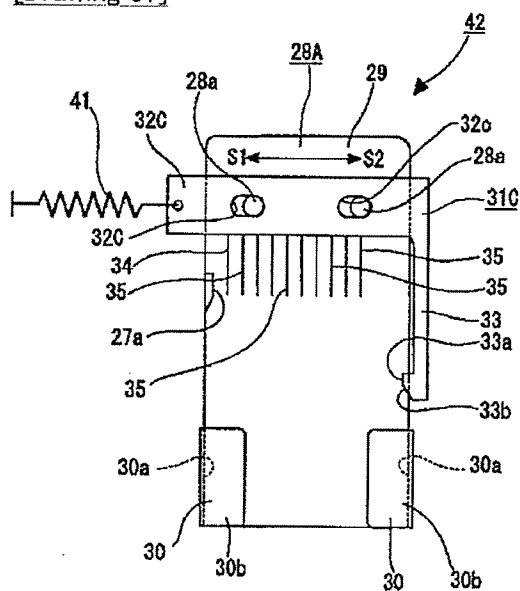
[Drawing 30]



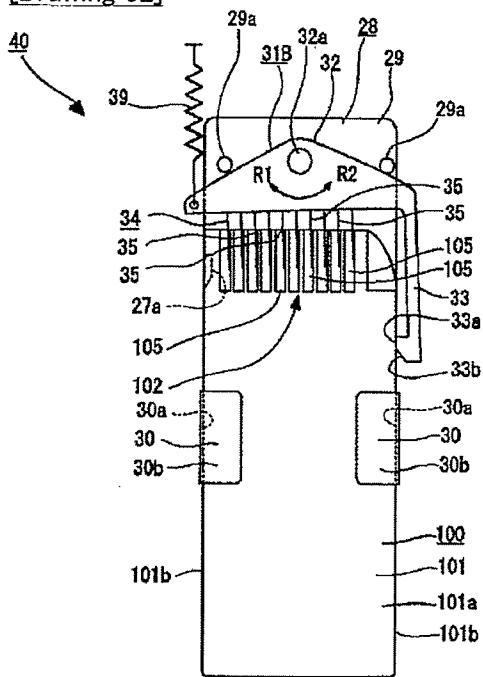
[Drawing 31]



[Drawing 37]

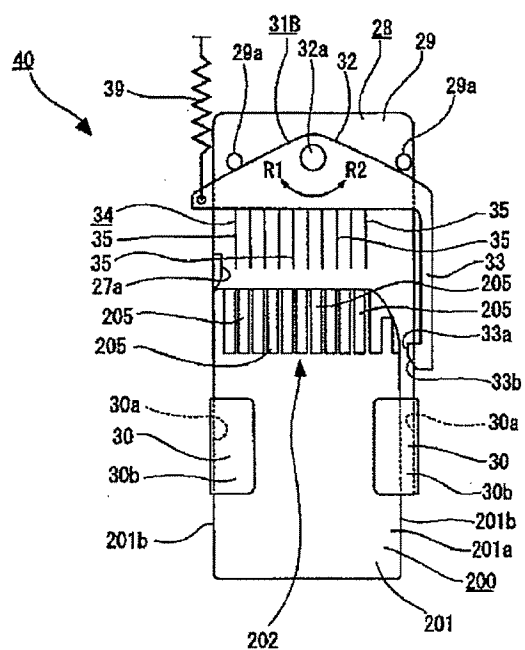


[Drawing 32]



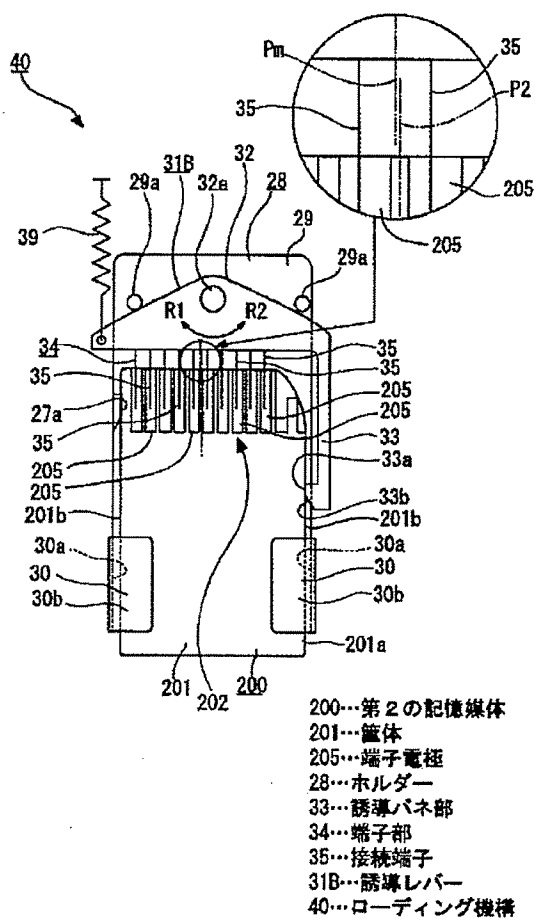
- 100...第1の記憶媒体
- 101...筐体
- 105...端子電極
- 28...ホルダー
- 33...誘導パネ部
- 34...端子部
- 35...接続端子
- 31B...誘導レバー
- 40...ローディング機構

[Drawing 33]



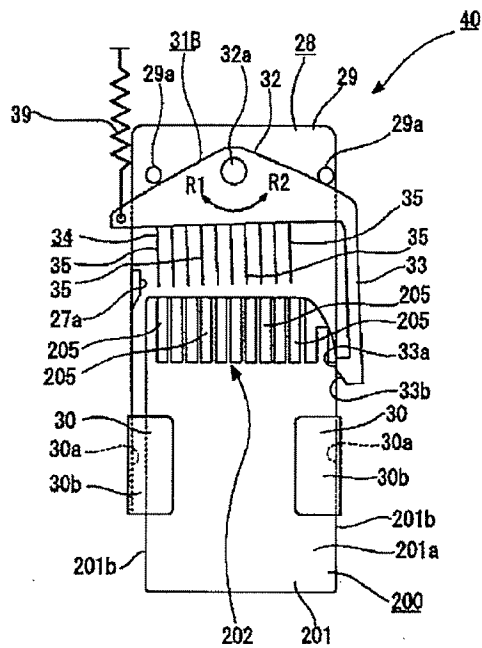
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 201...筐体  
 205...端子電極  
 28...ホルダー  
 33...誘導バネ部  
 34...端子部  
 35...接続端子  
 31B...誘導レバー  
 40...ローディング機構

[Drawing 34]



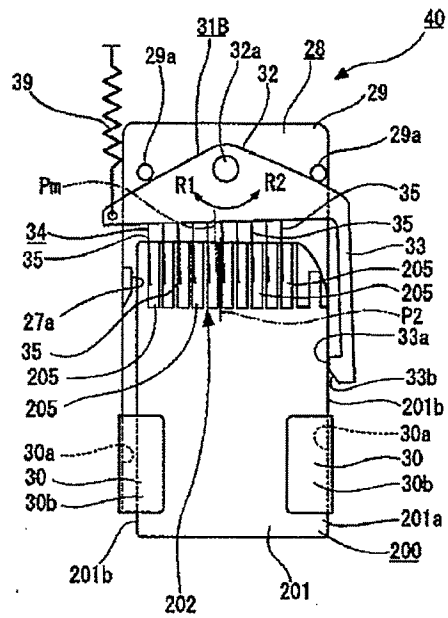
[Drawing 35]





- 200…第2の記憶媒体
- 201…筐体
- 205…端子電極
- 28…ホルダー
- 33…誘導パネ部
- 34…端子部
- 35…接続端子
- 31B…誘導レバー
- 40…ローディング機構

[Drawing 36]



- 200…第2の記憶媒体
- 201…筐体
- 205…端子電極
- 28…ホルダー
- 33…誘導パネ部
- 34…端子部
- 35…接続端子
- 31B…誘導レバー
- 40…ローディング機構

[Translation done.]



【特許請求の範囲】

【請求項1】 筐体に内蔵された半導体メモリと筐体に配列された複数の端子電極とを有する板状の記憶媒体が挿入されると共に該記憶媒体を案内するホルダーと、記憶媒体の複数の端子電極にそれぞれ係合されて接続される複数の接続端子を有すると共に該複数の接続端子がホルダーに挿入される記憶媒体の端子電極の略配列方向へ移動可能な端子部と、

記憶媒体がホルダーに挿入されたときに接続端子と端子電極とが互いに係合される方向へ端子部と記憶媒体とを誘導する誘導レバーとを備えたことを特徴とする記憶媒体のローディング機構。

【請求項2】 上記端子部を誘導レバーに設け、ホルダーに記憶媒体が挿入されたときに端子部を誘導レバーと一体に移動させるようにしたことを特徴とする請求項1に記載の記憶媒体のローディング機構。

【請求項3】 上記誘導レバーに、記憶媒体の外面のうち、ホルダーへの挿入方向に直交し、かつ、端子電極が配置された面に直交する面のうちの少なくとも一方の面に接したときに弾性変位可能な誘導バネ部を設けたことを特徴とする請求項1に記載の記憶媒体のローディング機構。

【請求項4】 上記誘導レバーをホルダーに対して回動可能とし、端子部の複数の接続端子を記憶媒体の複数の端子電極の略配列方向へ移動するようにしたことを特徴とする請求項1に記載の記憶媒体のローディング機構。

【請求項5】 上記誘導レバーをホルダーに対して該ホルダーに挿入される記憶媒体の端子電極の配列方向へ移動可能とし、端子部の複数の接続端子を記憶媒体の複数の端子電極の配列方向へ移動するようにしたことを特徴とする請求項1に記載の記憶媒体のローディング機構。

【請求項6】 上記端子電極の配列方向における筐体の大きさが第1の寸法である第1の記憶媒体がホルダーに挿入されたときに当該第1の記憶媒体がホルダーに案内され、端子電極の配列方向における筐体の大きさが第1の寸法より小さい第2の寸法である第2の記憶媒体がホルダーに挿入されたときに当該第2の記憶媒体が誘導レバーに誘導されるようにしたことを特徴とする請求項1に記載の記憶媒体のローディング機構。

【請求項7】 上記誘導レバーをホルダーに対して回動可能とすると共に誘導レバーに記憶媒体の端子電極の配列方向に離間する一対の誘導部を設け、

上記第2の記憶媒体がホルダーに挿入されたときに当該第2の記憶媒体が誘導部に摺接されて一対の誘導部間に誘導されると共に誘導レバーがホルダーに対して回動されて端子部の複数の接続端子が記憶媒体の複数の端子電極の略配列方向へ移動され、

端子部の各接続端子が第2の記憶媒体の各端子電極に係合されて接続されるようにしたことを特徴とする請求項

6に記載の記憶媒体のローディング機構。

【請求項8】 上記誘導レバーをホルダーに対して該ホルダーに挿入される記憶媒体の端子電極の配列方向へ移動可能とすると共に誘導レバーに記憶媒体の端子電極の配列方向に離間する一対の誘導部を設け、

上記第2の記憶媒体がホルダーに挿入されたときに当該第2の記憶媒体が誘導部に摺接されて一対の誘導部間に誘導されると共に誘導レバーがホルダーに対して端子電極の配列方向へ移動されて端子部の複数の接続端子が記憶媒体の複数の端子電極の配列方向へ移動され、

端子部の各接続端子が第2の記憶媒体の各端子電極に係合されて接続されるようにしたことを特徴とする請求項6に記載の記憶媒体のローディング機構。

【請求項9】 筐体に内蔵された半導体メモリと筐体に配列された複数の端子電極とを有する板状の記憶媒体に対するデータの書込及び／又は読出を行う記憶媒体ドライブ装置であって、

板状の記憶媒体が挿入されると共に該記憶媒体を案内するホルダーと、

記憶媒体の複数の端子電極にそれぞれ係合されて接続される複数の接続端子を有すると共に該複数の接続端子がホルダーに挿入される記憶媒体の端子電極の略配列方向へ移動可能な端子部と、

記憶媒体がホルダーに挿入されたときに接続端子と端子電極とが互いに係合される方向へ端子部と記憶媒体とを誘導する誘導レバーとを備えたことを特徴とする記憶媒体ドライブ装置。

【請求項10】 上記端子部を誘導レバーに設け、ホルダーに記憶媒体が挿入されたときに端子部を誘導レバーと一体に移動させるようにしたことを特徴とする請求項9に記載の記憶媒体ドライブ装置。

【請求項11】 上記誘導レバーに、記憶媒体の外面のうち、ホルダーへの挿入方向に直交し、かつ、端子電極が配置された面に直交する面のうちの少なくとも一方の面に接したときに弾性変位可能な誘導バネ部を設けたことを特徴とする請求項9に記載の記憶媒体ドライブ装置。

【請求項12】 上記誘導レバーをホルダーに対して回動可能とし、端子部の複数の接続端子を記憶媒体の複数の端子電極の略配列方向へ移動するようにしたことを特徴とする請求項9に記載の記憶媒体ドライブ装置。

【請求項13】 上記誘導レバーをホルダーに対して該ホルダーに挿入される記憶媒体の端子電極の配列方向へ移動可能とし、端子部の複数の接続端子を記憶媒体の複数の端子電極の配列方向へ移動するようにしたことを特徴とする請求項9に記載の記憶媒体ドライブ装置。

【請求項14】 上記端子電極の配列方向における筐体の大きさが第1の寸法である第1の記憶媒体がホルダーに挿入されたときに当該第1の記憶媒体がホルダーに案内され、

端子電極の配列方向における筐体の大きさが第1の寸法より小さい第2の寸法である第2の記憶媒体がホルダーに挿入されたときに当該第2の記憶媒体が誘導レバーに誘導されるようにしたことを特徴とする請求項9に記載の記憶媒体ドライブ装置。

【請求項15】 上記誘導レバーをホルダーに対して回動可能とすると共に誘導レバーに記憶媒体の端子電極の配列方向に離間する一対の誘導部を設け、

上記第2の記憶媒体がホルダーに挿入されたときに当該第2の記憶媒体が誘導部に摺接されて一対の誘導部間に誘導されると共に誘導レバーがホルダーに対して回動されて端子部の複数の接続端子が記憶媒体の複数の端子電極の略配列方向へ移動され、

端子部の各接続端子が第2の記憶媒体の各端子電極に係合されて接続されるようにしたことを特徴とする請求項14に記載の記憶媒体ドライブ装置。

【請求項16】 上記誘導レバーをホルダーに対して該ホルダーに挿入される記憶媒体の端子電極の配列方向へ移動可能とすると共に誘導レバーに記憶媒体の端子電極の配列方向に離間する一対の誘導部を設け、

上記第2の記憶媒体がホルダーに挿入されたときに当該第2の記憶媒体が誘導部に摺接されて一対の誘導部間に誘導されると共に誘導レバーがホルダーに対して端子電極の配列方向へ移動されて端子部の複数の接続端子が記憶媒体の複数の端子電極の配列方向へ移動され、

端子部の各接続端子が第2の記憶媒体の各端子電極に係合されて接続されるようにしたことを特徴とする請求項14に記載の記憶媒体ドライブ装置。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】本発明は記憶媒体のローディング機構及び記憶媒体ドライブ装置に関する。詳しくは、半導体メモリと複数の端子電極とを有する板状の記憶媒体をローディングするローディング機構及び該ローディング機構を備えた記憶媒体ドライブ装置についての技術分野に関する。

【0002】

【従来の技術】半導体メモリと複数の端子電極とを有する板状の記憶媒体がスロットに挿入されて記憶媒体装着部に装着され、当該記憶媒体に対するデータの書込及び／又は読出を行う記憶媒体ドライブ装置があり、現在、板状の記憶媒体として種々の大きさのものが提供されている。

【0003】このような記憶媒体の中には、同一の記憶媒体ドライブ装置のスロットに挿入されてデータの書込及び／又は読出を行うことが可能な共通の端子電極を有するものがあるが、それぞれ長さ、幅、厚みの違いにより大きさが異なるために、スロットを共有化する手段として、大きさの小さな記憶媒体にアダプターを装着してスロットに挿入し、共通の端子電極を有する何れの記

憶媒体をも使用できるようにしている。

【0004】

【発明が解決しようとする課題】ところが、アダプターを用いてスロットの共有化を図るようにした上記の場合には、大きさの小さな記憶媒体に対してデータの読み書きを行おうとするときに、その都度アダプターの装着が必要であり、使い勝手が悪いという問題がある。

【0005】一方、スロットの共有化を図るために、記憶媒体の端子電極に接続される接続端子をスロットの内部において固定し、スロットの内部に大きさの異なる記憶媒体毎の複数のガイドを設け、スロットに挿入された記憶媒体が何れのものであるかを検出して当該検出結果に応じてガイドを変更することも考慮されるが、このような構成では機構が複雑となってしまう記憶媒体ドライブ装置の製造コストの増大を来たしてしまう。

【0006】そこで、本発明記憶媒体のローディング機構及び記憶媒体ドライブ装置は、機構の簡素化を確保した上で使い勝手の向上を図ることを課題とする。

【0007】

【課題を解決するための手段】本発明記憶媒体のローディング機構及び記憶媒体ドライブ装置は、上記した課題を解決するために、筐体に内蔵された半導体メモリと筐体に配列された複数の端子電極とを有する板状の記憶媒体が挿入されると共に該記憶媒体を案内するホルダーと、記憶媒体の複数の端子電極にそれぞれ係合されて接続される複数の接続端子を有すると共に該複数の接続端子がホルダーに挿入される記憶媒体の端子電極の略配列方向へ移動可能な端子部と、記憶媒体がホルダーに挿入されたときに接続端子と端子電極とが互いに係合される方向へ端子部と記憶媒体とを誘導する誘導レバーとを設けたものである。

【0008】従って、本発明記憶媒体のローディング機構及び記憶媒体ドライブ装置にあっては、記憶媒体がホルダーに挿入されたときに、端子部の接続端子が記憶媒体の端子電極に接近する方向へ誘導される。

【0009】

【発明の実施の形態】以下に、本発明記憶媒体のローディング機構及び記憶媒体ドライブ装置の実施の形態を添付図面に従って説明する。

【0010】先ず、記憶媒体ドライブ装置のスロットに挿入されてデータの読み書きが行われる板状の記憶媒体について説明する（図1乃至図5参照）。

【0011】当該記憶媒体ドライブ装置には、大きさの異なる2種類の板状の第1の記憶媒体100と板状の第2の記憶媒体200が用いられる（図1及び図2参照）。

【0012】第1の記憶媒体100は略矩形状を為し、例えば、長さW11が50mm、幅W12が21.5mm、厚さW13が2.8mmとされている（図1参照）。

【0013】第1の記憶媒体100は筐体101にフラッシュメモリ等の半導体メモリが内蔵されており、筐体101は最大の面積を有する第1の主面101aと該第1の主面101aの反対側の面である図示しない第2の主面とを有している。

【0014】第1の主面101aの長手方向（前後方向）における一端部に電極部102が設けられている。電極部102には、第1の主面101aの短手方向（左右方向）に離間して等間隔に設けられた複数の仕切壁103、103、・・・によって10個の接続用凹部104、104、・・・が形成されている。接続用凹部104、104、・・・は第1の主面101aの長手方向における一方（後方）及び第1の記憶媒体100の厚み方向（上下方向）における一方（上方）に開口され、接続用凹部104、104、・・・にはそれぞれ端子電極105、105、・・・が配置されている。

【0015】第1の記憶媒体100の電極部102に隣接する部分は上方に開口された切欠部106として設けられ、該切欠部106の外縁が略円弧状を為す面取り部107として形成されている。

【0016】第1の記憶媒体100が記憶媒体ドライブ装置の後述するスロットに正規の状態で挿入されたときには、切欠部106及び面取り部107がスロットの内部に設けられた誤挿入防止部に対する逃げとなり、第1の記憶媒体100がスロットに挿入されて装着される。一方、第1の記憶媒体100が裏返しや長手方向における反対側からスロットに挿入された場合には、筐体101の切欠部106及び面取り部107が形成されていないコーナーが誤挿入防止部に接触され、第1の記憶媒体100のスロットへの挿入が規制され、誤挿入が防止される。

【0017】第1の主面101aの電極部102の近傍には、誤記録防止摘子108がスライド自在に設けられている。誤記録防止摘子108は、一方にスライドさせた状態において半導体メモリへのデータの書き込みを可能とし、他方にスライドさせた状態において半導体メモリへのデータの書き込みを不能とする機能を有する。

【0018】筐体101には、誤記録防止摘子108の側方に脱落防止用凹部109が形成されている。脱落防止用凹部109は、第1の記憶媒体100がスロットに挿入されたときにスロットの内部に設けられた脱落防止部が係合されることにより、第1の記憶媒体100の脱落を防止する役割を果たす。

【0019】第1の主面101aの脱落防止用凹部109が形成された側と反対側の側縁には係合凹部110が形成され、該係合凹部110は第1の記憶媒体100の長手方向における略中央部に形成されている。係合凹部110は、スロットの内部に設けられた係合突部が係合されることにより、第1の記憶媒体100が正規の状態

でスロットに挿入されたことを検出する役割を果たす。

【0020】筐体101の係合凹部110が形成された側の側面101bには、電極部102の側方の位置に後方に開口された係合溝111が形成されている。係合溝111にはスロットの内部に設けられた後述する係合片が係合される。

【0021】第2の記憶媒体200は略矩形状を為し、例えば、長さW21が31mm、幅W22が20mm、厚さW23が1.6mmとされ、第1の記憶媒体100よりも小さく形成されている（図2参照）。

【0022】第2の記憶媒体200は、一部を除いて、第1の記憶媒体100の電極部102と共通の電極部202が第1の主面201aに設けられており、仕切壁203、203、・・・のピッチが第1の記憶媒体100の仕切壁103、103、・・・のピッチと同じにされている。

【0023】第2の記憶媒体200は、第1の記憶媒体100と同様の各部を有しており、接続用凹部204、204、・・・にそれぞれ端子電極205、205、・・・が配置され、筐体202に切欠部206、面取り部207、誤記録防止摘子208、脱落防止用凹部209、係合凹部210を有している。尚、第2の記憶媒体200には、第1の記憶媒体100に形成された係合溝111に相当する係合溝は形成されていない。

【0024】第2の記憶媒体200は、電極部202の左右方向における幅が第1の記憶媒体100の電極部102の左右方向における幅と同じにされており、第2の記憶媒体200の最も右側にある端子電極205の右端から筐体201の右側面201bまでの距離D21は、第1の記憶媒体100の最も右側にある端子電極105の右端から筐体101の右側面101bまでの距離D11よりも僅かに小さく、第2の記憶媒体200の最も左側にある端子電極205の左端から筐体201の左側面201bまでの距離D22は、第1の記憶媒体100の最も左側にある端子電極105の左端から筐体101の左側面101bまでの距離D12よりも僅かに小さくされている（図1及び図2参照）。

【0025】次に、第1の記憶媒体100の端子電極105、105、・・・及び第2の記憶媒体200の端子電極205、205、・・・の電極構造について説明する（図3参照）。端子電極105、105、・・・及び端子電極205、205、・・・の電極構造は同じである。

【0026】端子電極105、105、・・・及び端子電極205、205、・・・は、何れも10個の平面電極（端子T1乃至T10）が一列に配置されている。

【0027】端子T1及び端子T10は検出電圧VSS端子である。端子T2はシリアルプロトコルバスステート信号BSの入力端子である。端子T3及び端子T9は電源電圧V記憶媒体の端子である。端子T4はシリアル

プロトコルデータ信号の入出力端子である。端子T5及び端子T7は予備端子である。端子T6は第1の記憶媒体100及び第2の記憶媒体200の検出用の検出端子である。端子T8はシリアルクロックSCLKの入力端子である。

【0028】次に、端子T1乃至T10と第1の記憶媒体100及び第2の記憶媒体200の内部構造との関係を説明する(図4参照)。第1の記憶媒体100と第2の記憶媒体200の内部構造は同じである。

【0029】筐体101、201の内部には、それぞれコントロールIC112、212と半導体メモリ113、213とが配置されている。

【0030】コントロールIC112、212は半導体メモリ113、213に対するデータの読み書きを行う機能を有している。コントロールIC112、212は端子T2、端子T4及び端子T8と接続され、端子T2からシリアルプロトコルバスステート信号BSが入力され、端子T8からシリアルクロックSCLKが入力される。

【0031】書込動作時には、端子T2から入力されるシリアルプロトコルバスステート信号BS及び端子T8から入力されるシリアルクロックSCLKに基づいて、半導体メモリ113、213に対して端子T4から入力されるデータの書き込みが行われる。

【0032】読出動作時には、シリアルプロトコルバスステート信号BS及びシリアルクロックSCLKに基づいて、半導体メモリ113、213からのデータの読み出しが行われ、端子T4を介して読み出されたデータが記憶媒体ドライブ装置に出力される。

【0033】検出電圧VSSは端子T6に入力され、記憶媒体ドライブ装置において抵抗Rによって端子T6の電圧が検出され、第1の記憶媒体100又は第2の記憶媒体200が記憶媒体ドライブ装置のスロットに挿入されているかどうかの検出が行われる。

【0034】コントロールIC112、212は、それぞれメモリコントローラー112a、212a、レジスタ112b、212b、ページバッファ112c、212c及びシリアルインターフェース112d、212dを有している(図5参照)。

【0035】メモリコントローラー112a、212aは、レジスタ112b、212bに設定されたパラメータに基づいて、半導体メモリ113、213とページバッファ112c、212cとの間でのデータの転送を行う。ページバッファ112c、212cにバッファリングされたデータは、シリアルインターフェース112d、212dを介して記憶媒体ドライブ装置に転送され、また、記憶媒体ドライブ装置から転送されたデータは、シリアルインターフェース112d、212dを介してページバッファ112c、212cにバッファリングされる。

【0036】次に、第1の記憶媒体100及び第2の記憶媒体200に対してデータの読み書きを行う記憶媒体ドライブ装置について説明する(図5乃至図7参照)。

【0037】記憶媒体ドライブ装置1は、第1の記憶媒体100及び第2の記憶媒体200に対して、例えば、動画データ、静止画データ、音声データ、HiFiデータ(音楽データ)、コンピューター用データ、制御用データ等の各種のデータの読み書きを行うことができ、外筐2の内部に所要の各部が配置されて成る。

【0038】外筐2の前面2aには、液晶パネルによって形成された表示部3が設けられ(図6参照)、該表示部3に、再生された画像や文字、再生される音声や音楽に関する情報、操作ガイドメッセージ等が表示される。

【0039】前面2aには、第1の記憶媒体100及び第2の記憶媒体200が挿入されるスロット4が形成されている。

【0040】前面2aには、複数の操作キー5、5、・・・が設けられ、該操作キー5、5、・・・を操作することにより、例えば、電源のオン・オフ、データの記録・再生、記録動作や再生動作等の停止、再生時の早送り・早戻し、音量の変更、データの編集、メニューの選択、動作モードの設定等の各種の操作を行うことができる。

【0041】前面2aの下端部には各種の機器等との接続用端子6、6、・・・が設けられている。接続用端子6、6、・・・としては、例えば、ヘッドホン端子6a、ライン出力端子6b、マイク入力端子6c、ライン入力端子6d、デジタル入力端子6e、USB(Universal Serial Bus)端子6f等である。

【0042】記憶媒体ドライブ装置1には、例えば、商用交流電源から電源コンセント7を介して電力が供給される。

【0043】記憶媒体ドライブ装置1には第1の記憶媒体100及び第2の記憶媒体200に対するインターフェース構造として、ファイルマネージャー8、転送プロトコルインターフェース9、シリアルインターフェース10が設けられている(図5参照)。

【0044】ファイルマネージャー8は第1の記憶媒体100及び第2の記憶媒体200を管理する機能を有し、第1の記憶媒体100及び第2の記憶媒体200に対するアクセスがファイルマネージャー8の指令に基づいて実行される。

【0045】転送プロトコルインターフェース9は、第1の記憶媒体100及び第2の記憶媒体200のレジスタ112b、212b及びページバッファ112c、212cに対するアクセスを実行する。

【0046】シリアルインターフェース10は、第1の記憶媒体100及び第2の記憶媒体200がスロット4

に挿入されたときに、シリアルクロック (SCLK)、バスステイト (BS)、シリアルデータ (SDIO) において任意のデータ転送を行うためのプロトコルを規定し、第1の記憶媒体100又は第2の記憶媒体200のシリアルインターフェース112d、212dとの間でデータの授受を行う。

【0047】次に、記憶媒体ドライブ装置1に設けられた回路構成を説明する(図7参照)。

【0048】CPU (Central Processing Unit) 11は記憶媒体ドライブ装置1の中央制御部として機能し、以下の各部の動作制御を行う。

【0049】CPU 11は、例えば、動作プログラムや各種の定数を記憶したROM (Read Only Memory) 11aとワーク領域としてのRAM (Random Access Memory) 11bとを有している。CPU 11は、上記操作キー5、5、・・・に対する操作により入力された指令信号に基づいて、動作プログラムで規定される制御動作を実行する。

【0050】CPU 11は、フラッシュメモリー12に音楽記録モードや表示モード等の各種のモード設定等の動作に関するシステム設定情報などを記憶させる。また、CPU 11は、例えば、第1の記憶媒体100及び第2の記憶媒体200に対する読み書き動作等の際に、D-RAM等により形成されたバッファメモリー13に一時的にデータを格納することができる。

【0051】リアルタイムクロック14は、現在日時を計数する機能を有する。CPU 11はリアルタイムクロック14からの日時データにより現在日時を確認する。

【0052】USBインターフェース15は、外筐2に設けられた上記USB端子6fに接続された外部機器との間の通信用インターフェースである。CPU 11はUSBインターフェース15を介して外部機器であるパーソナルコンピュータ等との間でデータ通信を行うことができる。例えば、制御データ、コンピュータデータ、画像データ、オーディオデータ等の送受信が行われる。

【0053】電源部としては、レギュレーター16、DC/DCコンバーター17を有する。CPU 11は、電源オンとする際に、レギュレーター16に対して電源オンの指令信号を送出する。レギュレーター16はCPU 11からの指令信号に基づいて、電源コンセント7を介して供給される交流電圧の整流/平滑を行う。レギュレーター16からの電源電圧はDC/DCコンバーター17において所要の電圧値に変換され、動作電源電圧V記憶媒体のとして各部に供給される。

【0054】CPU 11は、メモリーインターフェース18を介して第1の記憶媒体100及び第2の記憶媒体200に対するアクセスが可能となり、各種のデータの記録、再生、編集等の実行が可能とされる。

【0055】CPU 11は、表示ドライバー19を制御することにより、外筐2に設けられた表示部3に所要の画像を表示させる。

【0056】外筐2に設けられた接続用端子6、6、・・・、即ち、ヘッドホン端子6a、ライン出力端子6b、マイク入力端子6c、ライン入力端子6d、デジタル入力端子6eに対するオーディオ信号処理系として、SAM (Security Application Module: 暗号化/展開処理部) 20、DSP (Digital Signal Processor) 21、アナログデジタル変換部22、パワーアンプ23、マイクアンプ24、光入力モジュール25及びデジタル入力部26が設けられている。

【0057】SAM 20は、CPU 11とDSP 21との間でデータの暗号化及び暗号解読(復号)を行うとともに、CPU 11との間で暗号キーの授受を行う。暗号キーは、例えば、フラッシュメモリー12に記憶されている。SAM 20は暗号キーを用いて暗号化及び復号化を行うことができる。SAM 20による暗号化及び復号化は、例えば、USBインターフェース15を介して外部機器であるパーソナルコンピュータ等にデータを伝送する際やデータを受け取る際等に、CPU 11の指令に応じて実行される。

【0058】DSP 21は、CPU 11の指令に基づいて、オーディオデータの圧縮処理及び伸長処理を行う。

【0059】アナログデジタル変換部22は、オーディオ信号に関してA/D変換及びD/A変換を行う。

【0060】デジタル入力部26は、光入力モジュール25によって取り込まれたデジタルオーディオデータの入力インターフェース処理を行う。

【0061】記憶媒体ドライブ装置1においては、以下のようにオーディオ信号の入出力が行われる。

【0062】デジタルオーディオデータとして、外部機器、例えば、ディスクプレーヤー等から光ケーブルを介してデジタル入力端子6eに入力された信号は、光入力モジュール25によって光電変換されて取り込まれ、デジタル入力部26によって送信フォーマットに応じた受信処理が行われる。受信処理されたデジタルオーディオデータは、DSP 21で圧縮処理されてCPU 11に供給され、第1の記憶媒体100及び第2の記憶媒体200に対する記録データとされる。

【0063】マイク入力端子6cにマイクホーンが接続された場合には、その入力音声信号がマイクアンプ24によって増幅された後、アナログデジタル変換部22によってA/D変換され、デジタルオーディオデータとしてDSP 21に供給される。供給されたデータは、DSP 21における圧縮処理を介してCPU 11に供給され、第1の記憶媒体100又は第2の記憶媒体200に対する記録データとされる。

【0064】ライン入力端子6dに接続された外部機器



からの入力音声信号は、アナログデジタル変換部22によってA/D変換され、デジタルオーディオデコーダーとしてDSP21に供給される。供給されたデコーダーは、DSP21における圧縮処理を介してCPU11に供給され、第1の記憶媒体100又は第2の記憶媒体200に対する記録デコーダーとされる。

【0065】一方、例えば、第1の記憶媒体100又は第2の記憶媒体200から読み出されたオーディオデコーダーを出力する際等は、CPU11の指令に基づいて当該オーディオデコーダーについてDSP21によって伸張処理が行われる。伸張処理が行われたデジタルオーディオデコーダーは、アナログデジタル変換部22によってアナログオーディオ信号に変換されてパワーアンプ23に供給される。パワーアンプ23においては、ヘッドホン用の増幅処理及びライン出力用の増幅処理が行われ、それぞれヘッドホン端子6a及びライン出力端子6bに供給される。

【0066】次に、外筐2に形成されたスロット4の内部構造について説明する(図8乃至図11参照)。

【0067】記憶媒体ドライブ装置1のスロット4の内部は第1の記憶媒体100又は第2の記憶媒体200が装着される記憶媒体装着部27として形成されている(図8参照)。記憶媒体装着部27には第1の記憶媒体の係合溝111に挿入されて係合される係合片27aが設けられている。

【0068】記憶媒体装着部27にはホルダー28が配置されている。ホルダー28は縦長の平板状を為すベース部29と該ベース部29の前端部の両側縁に設けられたガイド部30、30とが一体に形成されて成る(図8及び図9参照)。ガイド部30、30は、それぞれベース部29から垂直に突出された案内壁部30a、30aと該案内壁部30a、30aの先端縁から互いに近づく方向へ突出された押さえ壁部30b、30bとから成る。

【0069】ベース部29の後端部には、左右に離間して規制突部29a、29aが設けられている。

【0070】ガイド部30、30の案内壁部30a、30a間の間隔は、第1の記憶媒体100の幅W12と略同じか僅かに大きくされ(図9参照)、押さえ壁部30b、30bとベース部29との間隔は、第1の記憶媒体100の厚みW13より僅かに大きくされている。

【0071】ホルダー28のベース部29の後端部には誘導レバー31が回動自在に支持されている(図8乃至図10参照)。誘導レバー31は基部32と該基部32の左右両端部から略前方へ突出された誘導バネ部33、33とが一体に形成されて成る。

【0072】基部32の左右方向における中央部には回動軸部32aが設けられ、該回動軸部32aを介して誘導レバー31がホルダー28のベース部29に回動自在に支持されている。

【0073】誘導バネ部33、33の先端部には、それぞれ互いに近づく方向へ突出された誘導突部33a、33aが設けられている。誘導突部33a、33aには、後方へ行くに従って互いに近づく方向へ変位する傾斜面33b、33bが形成されている。

【0074】誘導バネ部33、33は基部32に対して、誘導突部33a、33aが略左右方向へ移動する方向へ弾性変位可能とされている。

【0075】誘導レバー31は誘導突部33a、33a間における最小距離La(図9参照)が、第2の記憶媒体200の幅W23と略同じにされている。従って、第2の記憶媒体200がホルダー28に挿入されたときには、第2の記憶媒体200の側面201b、201bが誘導バネ部33、33の誘導突部33a、33aに当接又は近接される。

【0076】基部32の前面には端子部34が設けられ、該端子部34は10個の接続端子35、35、・・・によって構成されている。接続端子35、35、・・・は左右方向に等間隔に離間して設けられ、ピッチが第1の記憶媒体100及び第2の記憶媒体200の端子電極105、105、・・・、205、205、・・・のピッチと同じにされている。接続端子35、35、・・・の左右方向における幅は、端子電極105、105、・・・、205、205、・・・の左右方向における幅より小さくされている。

【0077】接続端子35は、基部32に対して弾性変位可能とされており、基部32から突出された基端部35aと、該基端部35aの先端から折り返され基端部35aに対して傾斜され側方から見てV字状を為す弾接部35bとから成る(図10参照)。弾接部35bは基端部35aに対して弾性変位可能とされている。

【0078】10個の接続端子35、35、・・・によって構成された端子部34は、メモリーインターフェース18に接続されている(図7参照)。

【0079】誘導レバー31は、外力が付与されていない状態において、中立用バネ36によってホルダー28に対する中立位置、即ち、回動範囲における中央に保持される(図9参照)。

【0080】誘導レバー31は基部32がホルダー28のベース部29に設けられた規制突部29a、29aによって、必要以上の回動が規制される。従って、誘導レバー31の回動範囲においては、誘導突部33a、33aの傾斜面33b、33bの前端P、Pがホルダー28の案内壁部30a、30aの内面Q、Qより内側に位置されないようにされている(図11参照)。

【0081】以上のようにして構成されたホルダー28、誘導レバー31及び端子部34によって、第1の記憶媒体100及び第2の記憶媒体200を記憶媒体装着部27にローディングするローディング機構37が構成される。

【0082】以下に、ローディング機構37のローディング動作について説明する(図12乃至図21参照)。尚、第1の記憶媒体100及び第2の記憶媒体200は、何れも電極部102、202側からスロット4に挿入される。

【0083】まず、外筐2のスロット4に第1の記憶媒体100が挿入されたときの動作について説明する(図12乃至図14参照)。

【0084】第1の記憶媒体100がスロット4に挿入されると、第1の記憶媒体100の側面101b、101bがホルダー28のガイド部30の案内壁部30a、30aに案内されて後方へ移動されていく(図12参照)。

【0085】後方へ移動される第1の記憶媒体100は、誘導レバー31の誘導バネ部33、33の傾斜面33b、33bに摺接される(図13参照)。第1の記憶媒体100の幅W12は誘導突部33a、33a間における最小距離 $l_a$ よりも大きくされているため、第1の記憶媒体100の後方への移動に伴って誘導バネ部33、33が互いに離間する方向へ弾性変位される(図14参照)。

【0086】第1の記憶媒体100は誘導バネ部33、33間に挿入されていき、待ち受けている接続端子35、35、・・・にそれぞれ端子電極105、105、・・・が接続される(図14参照)。接続端子35、35、・・・は弾性変位可能であるため、弾接部35b、35b、・・・が端子電極105、105、・・・に弾接され、両者の確実な接続状態が確保される。接続端子35、35、・・・にそれぞれ端子電極105、105、・・・が接続された状態においては、第1の記憶媒体100の係合溝111に係合片27aに係合されている(図14参照)。

【0087】第1の記憶媒体100のスロット4からの取出は、例えば、外筐2に設けられた図示しないイジェクト鉤を操作することによりスロット4内に設けられた図示しないイジェクト機構によって第1の記憶媒体100がスロット4から排出されることにより行われる。第1の記憶媒体100がスロット4から取り出されると、変位されていた誘導バネ部33、33が弾性復帰して元の状態に戻る。

【0088】次に、外筐2のスロット4に第2の記憶媒体200が挿入されたときの動作について説明する(図15乃至図21参照)。

【0089】例えば、第2の記憶媒体200がスロット4に対して左方に寄った状態で該スロット4に挿入されると、第2の記憶媒体200は誘導レバー31の左側の誘導バネ部33の傾斜面33bに摺接される(図15参照)。

【0090】第2の記憶媒体200は傾斜面33bに摺接されて後方へ移動されていき、このとき第2の記憶媒

体200の傾斜面33bに対する押圧力により、誘導レバー31がR1方向へ回動される(図16参照)。従って、接続端子35、35、・・・が左方側に変位される。

【0091】第2の記憶媒体200は誘導バネ部33、33間に挿入されていき、誘導レバー31のR1方向への回動により左方側に変位されて待ち受けている接続端子35、35、・・・に、それぞれ端子電極205、205、・・・が接続される(図17参照)。接続端子35、35、・・・は弾性変位可能であるため、弾接部35b、35b、・・・が端子電極205、205、・・・に弾接され、両者の確実な接続状態が確保される。

【0092】尚、第1の記憶媒体100と第2の記憶媒体200がホルダー28に挿入されたときには、両者の厚さW13、W23の違いによりホルダー28内における端子電極105、105、・・・と端子電極205、205、・・・との上下方向における位置が異なり、端子電極205、205、・・・は端子電極105、105、・・・に比して接続端子35に対して下方へ離間されるが、この差は、接続端子35の弾性変位量によって吸収され、接続端子35、35、・・・は端子電極105、105、・・・と端子電極205、205、・・・の何れに対しても確実に接続される。

【0093】第2の記憶媒体200の端子電極205、205、・・・が接続端子35、35、・・・に接続され第2の記憶媒体200が記憶媒体装着部27に装着された状態においては、中立用バネ36によって誘導レバー28が中立位置に保持される(図18参照)。接続端子35、35、・・・にそれぞれ端子電極205、205、・・・が接続された状態においては、第2の記憶媒体200の左側面201bに係合片27aに接した状態とされている。

【0094】第2の記憶媒体200のスロット4からの取出は、第1の記憶媒体100の場合と同様に、イジェクト機構によってスロット4から排出されることにより行われる。

【0095】一方、第2の記憶媒体200がスロット4に対して右方に寄った状態で該スロット4に挿入されると、第2の記憶媒体200は誘導レバー31の右側の誘導バネ部33の傾斜面33bに摺接される(図19参照)。

【0096】第2の記憶媒体200は傾斜面33bに摺接されて後方へ移動されていき、このとき第2の記憶媒体200の傾斜面33bに対する押圧力により、ホルダー28がR2方向へ回動される(図20参照)。従って、接続端子35、35、・・・が右方側に変位される。

【0097】第2の記憶媒体200は誘導バネ部33、33間に挿入されていき、誘導レバー31のR2方向への回動により右方側に変位されて待ち受けている接続端

子35、35、・・・に、それぞれ端子電極105、105、・・・が接続される(図21参照)。接続端子35、35、・・・は弾性変位可能であるため、弾接部35b、35b、・・・が端子電極205、205、・・・に弾接され、両者の確実な接続状態が確保される。

【0098】第2の記憶媒体200の端子電極205、205、・・・が接続端子35、35、・・・に接続され第2の記憶媒体200が記憶媒体装着部27に装着された状態においては、中立用バネ36によって誘導レバー28が中立位置に保持される。接続端子35、35、・・・にそれぞれ端子電極205、205、・・・が接続された状態においては、第2の記憶媒体200の左側面201bが係合片27aに接した状態とされている。

【0099】第2の記憶媒体200のスロット4からの取出は、第1の記憶媒体100の場合と同様に、イジェクト機構によってスロット4から排出されることにより行われる。

【0100】以上に記載した通り、記憶媒体ドライブ装置1にあっては、第2の記憶媒体200がホルダー28に挿入されたときに接続端子35、35、・・・と端子電極205、205、・・・とが互いに係合される方向へ端子部34と第2の記憶媒体200とが誘導レバー31によって誘導されるため、記憶媒体装着部27に第1の記憶媒体100と第2の記憶媒体200の双方をアダプターを用いずに装着することができ、スロット4の共有化による使い勝手の向上を図ることができる。

【0101】また、スロット4に挿入された記憶媒体の大きさの違いを検出するための検出手段を必要としないと共に第1の記憶媒体100と第2の記憶媒体200毎のガイドも必要としないため、機構の簡素化による記憶媒体ドライブ装置1の製造コストの低減を図ることができる。

【0102】記憶媒体ドライブ装置1にあっては、端子部34を誘導レバー31に設け端子部34を誘導レバー31と一体に移動させるようにしているため、誘導レバー31の動作に伴って端子部34を動作させるためのリンク機構が不要であり、部品点数の削減を図ることができると共に動作の信頼性の向上を図ることができる。

【0103】また、誘導レバー31に弾性変位可能な誘導バネ部33、33を設けているため、第1の記憶媒体100を端子電極105、105、・・・が接続端子35、35、・・・に接続される方向へ確実に誘導することができる。

【0104】さらに、誘導レバー31をホルダー28に回動可能とするだけでスロット4の共有化を図ることができるため、機構の簡素化を図ることができる。

【0105】さらにまた、第1の記憶媒体100がホルダー28に案内されて記憶媒体装着部27に装着され、第2の記憶媒体200が誘導レバー31に誘導されて記憶媒体装着部27に装着されるため、第1の記憶媒体1

00及び第2の記憶媒体200のそれぞれを記憶媒体装着部27に適正かつ確実に装着することができる。

【0106】加えて、第2の記憶媒体200は左右何れの側に寄った状態でスロット4に挿入されても、何れか一方の誘導バネ部33に必ず誘導されるため、接続端子35、35、・・・と端子電極205、205、・・・とを確実に接続することができる。

【0107】尚、上記には、中立用バネ36を設けて誘導レバー31を中立位置に保持する場合を示したが、ローディング機構37にあっては、上記のように、誘導レバー31の回動範囲において傾斜面33b、33bの前端P、Pがホルダー28の案内壁部30a、30aの内面Q、Qより内側に位置されないようにされている(図11参照)ため、第1の記憶媒体100及び第2の記憶媒体200は常に誘導バネ部33、33間に挿入されるので、必ずしも中立用バネ36を設ける必要はない。

【0108】次に、ホルダー28と誘導レバー31の第1の変形例であるホルダー28Aと誘導レバー31Aについて説明する(図22乃至図27参照)。尚、以下に示す第1の変形例は、ホルダー28及び誘導レバー31と比較して、ホルダー28Aに誘導レバー31Aが左右方向へ移動自在に支持されていることのみが相違するため、ホルダー28及び誘導レバー31と比較して異なる部分についてのみ詳細に説明をし、その他の部分についてはホルダー28及び誘導レバー31における同様の部分に付した符号と同じ符号を付して説明は省略する。

【0109】ホルダー28Aの後端寄りの位置には、左右に離間して支持ピン28a、28aが設けられている(図22参照)。ホルダー28Aには上記ホルダー28に設けられた規制突部29a、29aは設けられていない。

【0110】誘導レバー31Aは基部32Aと該基部32Aの左右両端部から略前方へ突出された誘導バネ部33、33とが一体に形成されて成る。基部32Aには左右に離間して左右方向に長い被支持孔32b、32bが形成され、該被支持孔32b、32bにホルダー28Aの支持ピン28a、28aが挿入され、誘導レバー31Aがホルダー28Aに左右方向、即ち、図22に示すS1-S2方向へ移動自在に支持されている(図22参照)。基部32Aの前面には10個の接続端子35、35、・・・から成る端子部34が設けられている。

【0111】以上のようにして構成されたホルダー28A、誘導レバー31A及び端子部34によって、第1の記憶媒体100及び第2の記憶媒体200をローディングするローディング機構38が構成される。

【0112】以下に、ローディング機構38のローディング動作について説明する(図23乃至図27参照)。

【0113】外筐2のスロット4に第1の記憶媒体100が挿入されると、ローディング機構37の場合と同様に、第1の記憶媒体100は弾性変位される誘導バネ部

33、33間に挿入されていき、待ち受けている接続端子35、35、・・・に、それぞれ端子電極105、105、・・・が接続される(図23参照)。

【0114】外筐2のスロット4に対して第2の記憶媒体200が左方に寄った状態で該スロット4に挿入されると、第2の記憶媒体200は誘導レバー31の左側の誘導バネ部33の傾斜面33bに摺接されて後方へ移動されていき、このとき第2の記憶媒体200の傾斜面33bに対する押圧力により、ホルダー28AがS1方向へ移動される(図24参照)。従って、接続端子35、35、・・・が左方側に変位される。

【0115】第2の記憶媒体200は誘導バネ部33、33間に挿入されていき、ホルダー28AのS1方向への移動により左方側に変位されて待ち受けている接続端子35、35、・・・に、それぞれ端子電極205、205、・・・が接続される(図25参照)。

【0116】一方、外筐2のスロット4に対して第2の記憶媒体200が右方に寄った状態で該スロット4に挿入されると、第2の記憶媒体200は誘導レバー31の右側の誘導バネ部33の傾斜面33bに摺接されて後方へ移動されていき、このとき第2の記憶媒体200の傾斜面33bに対する押圧力により、ホルダー28AがS2方向へ移動される(図26参照)。従って、接続端子35、35、・・・が右方側に変位される。

【0117】第2の記憶媒体200は誘導バネ部33、33間に挿入されていき、ホルダー28AのS2方向への移動により右方側に変位されて待ち受けている接続端子35、35、・・・に、それぞれ端子電極205、205、・・・が接続される(図27参照)。

【0118】以上に記載した通り、ローディング機構38にあっては、誘導レバー31Aがホルダー28Aに挿入される第1の記憶媒体100及び第2の記憶媒体200の端子電極105、105、・・・、205、205、・・・の配列方向へ移動されるため、接続端子35、35、・・・と端子電極105、105、・・・又は端子電極205、205、・・・との接続を確実に行うことができる。

【0119】また、第2の記憶媒体200は左右何れの側に寄った状態でスロット4に挿入されても、何れか一方の誘導バネ部33に必ず誘導されるため、接続端子35、35、・・・と端子電極205、205、・・・とを確実に接続することができる。

【0120】尚、ローディング機構38にあっては、誘導レバー31Aを中立位置に保持させるための中立用バネを設けてもよい。

【0121】次に、誘導レバー31の第2の変形例である誘導レバー31Bについて説明する(図28乃至図36参照)。尚、以下に示す第2の変形例は、誘導レバー31と比較して、ホルダー28に1つの誘導バネ部33のみを有する誘導レバー31Bが回動自在に支持されて

いることのみが相違するため、誘導レバー31と比較して異なる部分についてのみに詳細に説明をし、その他の部分については誘導レバー31における同様の部分に付した符号と同じ符号を付して説明は省略する。

【0122】誘導レバー31Bは基部32と該基部32の左右両端部の何れか一方、例えば、右端部から略前方へ突出された誘導バネ部33とが一体に形成されて成る(図28参照)。

【0123】基部32は回動軸部32aがホルダー28のベース部29に回動自在に支持されている。

【0124】誘導レバー31Bは、基部32と記憶媒体装着部27に設けられた図示しないバネ支持部との間に張設された引張コイルバネ39によって、R1方向へ付勢されている(図28参照)。従って、誘導レバー31Bに外力が付与されていない状態においては、基部32がベース部29に設けられた左側の規制突部29bに接しR1方向への回動が規制されている。誘導レバー31BのR1方向への回動が規制された状態においては、誘導バネ部33の傾斜面33bの前端がホルダー28の案内壁部30aの内面の真後ろの位置又はその僅かに右側に位置されている(図28参照)。

【0125】以上のようにして構成されたホルダー28、誘導レバー31B及び端子部34によって、第1の記憶媒体100及び第2の記憶媒体200をローディングするローディング機構40が構成される。

【0126】以下に、ローディング機構40のローディング動作について説明する(図29乃至図36参照)。

【0127】第1の記憶媒体100がスロット4に挿入されると、第1の記憶媒体100の側面101b、101bがホルダー28のガイド部30の案内壁部30a、30aに案内されて後方へ移動されていく(図29参照)。

【0128】後方へ移動される第1の記憶媒体100は、誘導レバー31Bの誘導バネ部33の傾斜面33bに摺接される(図30参照)。第1の記憶媒体100が後方へ移動されていくと、第1の記憶媒体100の傾斜面33bに対する押圧力により、誘導レバー31Bが引張コイルバネ39のバネ力に抗してR2方向へ回動される(図31参照)。従って、接続端子35、35、・・・が右方側に変位される。

【0129】第1の記憶媒体100がホルダー28に挿入されたときに、誘導レバー31BはR2方向における回動端まで回動されるが、この回動端において、端子部34の左右方向における中央線Pmは、第1の記憶媒体100の電極部102の左右方向における中央線P1に対し、僅かに右方に寄って位置されている(図31参照)。

【0130】第1の記憶媒体100は、さらに後方へ移動されることにより、右方側に変位されて待ち受けている接続端子35、35、・・・にそれぞれ端子電極10

5、105、・・・が接続される(図32参照)。このとき端子部34の左右方向における中央線P<sub>m</sub>が第1の記憶媒体100の電極部102の左右方向における中央線P1に対し僅かに右方に寄って位置されているが、上記したように、接続端子35、35、・・・の左右方向における幅が端子電極105、105、・・・の左右方向における幅より小さくされているため、中央線P<sub>m</sub>と中央線P1との差は接続端子35、35、・・・の左右方向における幅と端子電極105、105、・・・の左右方向における幅との差によって吸収され、接続端子35、35、・・・にそれぞれ端子電極105、105、・・・が適正に接続される。

【0131】接続端子35、35、・・・にそれぞれ端子電極105、105、・・・が接続された状態においては、第1の記憶媒体100の係合溝111に係合片27aが係合されている(図32参照)。

【0132】第2の記憶媒体200がスロット4に対して左方に寄った状態で該スロット4に挿入されると、第2の記憶媒体200は誘導バネ部33の傾斜面33bの左側を通して後方へ移動されていく(図33参照)。

【0133】第2の記憶媒体200には係合片27aが挿入される係合溝が形成されていないため、第2の記憶媒体200は係合片27aに摺接され、稍右側へ寄りながら後方へ移動され、待ち受けている接続端子35、35、・・・にそれぞれ端子電極205、205、・・・が接続される(図34参照)。このとき端子部34の左右方向における中央線P<sub>m</sub>が第2の記憶媒体200の電極部202の左右方向における中央線P2に対し僅かに左方に寄って位置されているが、上記したように、接続端子35、35、・・・の左右方向における幅が端子電極205、205、・・・の左右方向における幅より小さくされているため、中央線P<sub>m</sub>と中央線P2との差は接続端子35、35、・・・の左右方向における幅と端子電極205、205、・・・の左右方向における幅との差によって吸収され、接続端子35、35、・・・にそれぞれ端子電極205、205、・・・が適正に接続される。

【0134】一方、第2の記憶媒体200がスロット4に対して右方に寄った状態で該スロット4に挿入されると、第2の記憶媒体200は誘導レバー31Bの誘導バネ部33の傾斜面33bに摺接される。

【0135】第2の記憶媒体200は傾斜面33bに摺接されて後方へ移動されていき、このとき第2の記憶媒体200の傾斜面33bに対する押圧力により、誘導レバー31BがR2方向へ回動される(図35参照)。従って、接続端子35、35、・・・が右方側に変位される。

【0136】第2の記憶媒体200は、誘導レバー31BのR2方向への回動により右方側に変位されて待ち受けている接続端子35、35、・・・にそれぞれ端子電

極205、205、・・・が接続される(図36参照)。このとき端子部34の左右方向における中央線P<sub>m</sub>が第2の記憶媒体200の電極部202の左右方向における中央線P2に対し僅かに左方に寄って位置されているが、上記したように、接続端子35、35、・・・の左右方向における幅が端子電極205、205、・・・の左右方向における幅より小さくされているため、中央線P<sub>m</sub>と中央線P2との差は接続端子35、35、・・・の左右方向における幅と端子電極205、205、・・・の左右方向における幅との差によって吸収され、接続端子35、35、・・・にそれぞれ端子電極205、205、・・・が適正に接続される。

【0137】以上に記載した通り、ローディング機構40にあっては、誘導レバー31Bが基部32と一の誘導バネ部33のみによって構成されているため、機構の一層の簡素化を図ることができる。

【0138】尚、上記した誘導レバー31Bの誘導バネ部33は、基部32に対して弾性変位可能とされているが、誘導バネ部33を基部32に対して変位しないバネ性を有さない誘導部として設けてもよい。

【0139】また、上記には、誘導レバー31の第2の変形例としてホルダー28に回動自在に支持された誘導レバー31Bを説明したが、第3の変形例として、誘導レバー31Bに代えて、誘導レバー31Aのように、ホルダー28に対して左右方向に移動可能とされた誘導レバー31Cを設けてもよい(図37参照)。

【0140】誘導レバー31Cは基部32Cと該基部32Cの左右両端部の何れか一方、例えば、右端部から略前方へ突出された誘導バネ部33とが一体に形成されて成る。基部32Cには左右に離間して左右方向に長い被支持孔32c、32cが形成され、該被支持孔32c、32cにホルダー28Aの支持ピン28a、28aが挿入され誘導レバー31Cがホルダー28Aに左右方向に移動自在に支持されている。誘導レバー31Cの基部32Cの前面には端子部34が設けられている。

【0141】誘導レバー31Cは、基部32Cと記憶媒体装着部27に設けられた図示しないバネ支持部との間に張設された引張コイルバネ41によって、S1方向へ付勢されている。従って、誘導レバー31Cに外力が付与されていない状態においては、基部32Cが左方側の移動端に位置されている。

【0142】以上のようにして構成されたホルダー28A、誘導レバー31C及び端子部34によって、第1の記憶媒体100及び第2の記憶媒体200をローディングするローディング機構42が構成される。

【0143】ローディング機構42の動作は、ローディング機構40の動作において誘導レバー31BのR1ーR2方向における回動動作が、誘導レバー31CのS1ーS2方向における動作に置き換わるだけであるため、説明は省略する。

【0144】以上に記載した通り、ローディング機構42にあっては、誘導レバー31Cが基部32Cと一の誘導バネ部33のみによって構成されているため、機構の一層の簡素化を図ることができ、また、誘導レバー31Cに設けられた端子部34が端子電極105、105、・・・、205、205、・・・の配列方向へスライド動作されるため、接続端子35、35、・・・と端子電極105、105、・・・又は端子電極205、205、・・・との接続を確実に行うことができる。

【0145】上記した実施の形態において示した各部の形状及び構造は、何れも本発明の実施に際しての具体化のほんの一例を示したものに過ぎず、これらによって、本発明の技術的範囲が限定的に解釈されることがあってはならないものである。

【0146】

【発明の効果】以上に記載したところから明らかなように、本発明記憶媒体のローディング機構は、筐体に内蔵された半導体メモリと筐体に配列された複数の端子電極とを有する板状の記憶媒体が挿入されると共に該記憶媒体を案内するホルダーと、記憶媒体の複数の端子電極にそれぞれ係合されて接続される複数の接続端子を有すると共に該複数の接続端子がホルダーに挿入される記憶媒体の端子電極の略配列方向へ移動可能な端子部と、記憶媒体がホルダーに挿入されたときに接続端子と端子電極とが互いに係合される方向へ端子部と記憶媒体とを誘導する誘導レバーとを備えたことを特徴とする。

【0147】従って、大きさの異なる複数の記憶媒体をアダプターを用いずにローディングすることができ、記憶媒体が挿入されるスロットの共有化による使い勝手の向上を図ることができる。

【0148】また、スロットに挿入された記憶媒体の大きさの違いを検出するための検出手段を必要としないと共に各記憶媒体毎のガイドも必要としないため、機構の簡素化によるローディング機構の製造コストの低減を図ることができる。

【0149】請求項2に記載した発明にあっては、上記端子部を誘導レバーに設け、ホルダーに記憶媒体が挿入されたときに端子部を誘導レバーと一体に移動させるようにしたので、誘導レバーの動作に伴って端子部を動作させるためのリンク機構が不要であり、部品点数の削減を図ることができると共に動作の信頼性の向上を図ることができる。

【0150】請求項3に記載した発明にあっては、上記誘導レバーに、記憶媒体の外面のうち、ホルダーへの挿入方向に直交し、かつ、端子電極が配置された面に直交する面のうちの少なくとも一方の面に接したときに弾性変位可能な誘導バネ部を設けたので、各記憶媒体を端子電極が接続端子に接続される方向へ確実に誘導することができる。

【0151】請求項4に記載した発明にあっては、上記

誘導レバーをホルダーに対して回動可能とし、端子部の複数の接続端子を記憶媒体の複数の端子電極の略配列方向へ移動するようにしたので、誘導レバーをホルダーに回動可能とするだけでスロットの共有化を図ることができ、機構の簡素化を図ることができる。

【0152】請求項5に記載した発明にあっては、上記誘導レバーをホルダーに対して該ホルダーに挿入される記憶媒体の端子電極の配列方向へ移動可能とし、端子部の複数の接続端子を記憶媒体の複数の端子電極の配列方向へ移動するようにしたので、接続端子と端子電極との接続を確実に行うことができる。

【0153】請求項6に記載した発明にあっては、上記端子電極の配列方向における筐体の大きさが第1の寸法である第1の記憶媒体がホルダーに挿入されたときに当該第1の記憶媒体をホルダーが案内し、端子電極の配列方向における筐体の大きさが第1の寸法より小さい第2の寸法である第2の記憶媒体がホルダーに挿入されたときに当該第2の記憶媒体を誘導レバーが誘導するようにしたので、第1の記憶媒体及び第2の記憶媒体のそれぞれを適正かつ確実にローディングすることができる。

【0154】請求項7に記載した発明にあっては、上記誘導レバーをホルダーに対して回動可能とすると共に誘導レバーに記憶媒体の端子電極の配列方向に離間する一対の誘導部を設け、上記第2の記憶媒体がホルダーに挿入されたときに当該第2の記憶媒体が誘導部に摺接されて一対の誘導部間に誘導されると共に誘導レバーがホルダーに対して回動されて端子部の複数の接続端子が記憶媒体の複数の端子電極の略配列方向へ移動され、端子部の各接続端子が第2の記憶媒体の各端子電極に係合されて接続されるようにしたので、第2の記憶媒体がホルダーに対して片寄った状態で挿入されても、何れか一方の誘導バネ部に必ず誘導されるため、接続端子と端子電極とを確実に接続することができる。

【0155】請求項8に記載した発明にあっては、上記誘導レバーをホルダーに対して該ホルダーに挿入される記憶媒体の端子電極の配列方向へ移動可能とすると共に誘導レバーに記憶媒体の端子電極の配列方向に離間する一対の誘導部を設け、上記第2の記憶媒体がホルダーに挿入されたときに当該第2の記憶媒体が誘導部に摺接されて一対の誘導部間に誘導されると共に誘導レバーがホルダーに対して端子電極の配列方向へ移動されて端子部の複数の接続端子が記憶媒体の複数の端子電極の配列方向へ移動され、端子部の各接続端子が第2の記憶媒体の各端子電極に係合されて接続されるようにしたので、第2の記憶媒体がホルダーに対して片寄った状態で挿入されても、何れか一方の誘導バネ部に必ず誘導されるため、接続端子と端子電極とを確実に接続することができる、また、端子部が端子電極の配列方向へ移動されるため、接続端子と端子電極との接続を確実に行うことができる。

【0156】本発明記憶媒体ドライブ装置は、筐体に内蔵された半導体メモリと筐体に配列された複数の端子電極とを有する板状の記憶媒体に対するデータの書込及び／又は読出を行う記憶媒体ドライブ装置であって、板状の記憶媒体が挿入されると共に該記憶媒体を案内するホルダーと、記憶媒体の複数の端子電極にそれぞれ係合されて接続される複数の接続端子を有すると共に該複数の接続端子がホルダーに挿入される記憶媒体の端子電極の略配列方向へ移動可能な端子部と、記憶媒体がホルダーに挿入されたときに接続端子と端子電極とが互いに係合される方向へ端子部と記憶媒体とを誘導する誘導レバーとを備えたことを特徴とする。

【0157】従って、大きさの異なる複数の記憶媒体をアダプターを用いずにローディングすることができ、記憶媒体が挿入されるスロットの共有化による使い勝手の向上を図ることができる。

【0158】また、スロットに挿入された記憶媒体の大きさの違いを検出するための検出手段を必要としないと共に各記憶媒体毎のガイドも必要としないため、機構の簡素化による記憶媒体ドライブ装置の製造コストの低減を図ることができる。

【0159】請求項10に記載した発明にあっては、上記端子部を誘導レバーに設け、ホルダーに記憶媒体が挿入されたときに端子部を誘導レバーと一体に移動させるようにしたので、誘導レバーの動作に伴って端子部を動作させるためのリンク機構が不要であり、部品点数の削減を図ることができると共に動作の信頼性の向上を図ることができる。

【0160】請求項11に記載した発明にあっては、上記誘導レバーに、記憶媒体の外面のうち、ホルダーへの挿入方向に直交し、かつ、端子電極が配置された面に直交する面のうちの少なくとも一方の面に接したときに弾性変位可能な誘導バネ部を設けたので、各記憶媒体を端子電極が接続端子に接続される方向へ確実に誘導することができる。

【0161】請求項12に記載した発明にあっては、上記誘導レバーをホルダーに対して回動可能とし、端子部の複数の接続端子を記憶媒体の複数の端子電極の略配列方向へ移動するようにしたので、誘導レバーをホルダーに回動可能とするだけでスロットの共有化を図ることができ、機構の簡素化を図ることができる。

【0162】請求項13に記載した発明にあっては、上記誘導レバーをホルダーに対して該ホルダーに挿入される記憶媒体の端子電極の配列方向へ移動可能とし、端子部の複数の接続端子を記憶媒体の複数の端子電極の配列方向へ移動するようにしたので、接続端子と端子電極との接続を確実に行うことができる。

【0163】請求項14に記載した発明にあっては、上記端子電極の配列方向における筐体の大きさが第1の寸法である第1の記憶媒体がホルダーに挿入されたときに

当該第1の記憶媒体をホルダーが案内し、端子電極の配列方向における筐体の大きさが第1の寸法より小さい第2の寸法である第2の記憶媒体がホルダーに挿入されたときに当該第2の記憶媒体を誘導レバーが誘導するようにしたので、第1の記憶媒体及び第2の記憶媒体のそれぞれを適正かつ確実にローディングすることができる。

【0164】請求項15に記載した発明にあっては、上記誘導レバーをホルダーに対して回動可能とすると共に誘導レバーに記憶媒体の端子電極の配列方向に離間する一対の誘導部を設け、上記第2の記憶媒体がホルダーに挿入されたときに当該第2の記憶媒体が誘導部に摺接されて一対の誘導部間に誘導されると共に誘導レバーがホルダーに対して回動されて端子部の複数の接続端子が記憶媒体の複数の端子電極の略配列方向へ移動され、端子部の各接続端子が第2の記憶媒体の各端子電極に係合されて接続されるようにしたので、第2の記憶媒体がホルダーに対して片寄った状態で挿入されても、何れか一方の誘導バネ部に必ず誘導されるため、接続端子と端子電極とを確実に接続することができる。

【0165】請求項16に記載した発明にあっては、上記誘導レバーをホルダーに対して該ホルダーに挿入される記憶媒体の端子電極の配列方向へ移動可能とすると共に誘導レバーに記憶媒体の端子電極の配列方向に離間する一対の誘導部を設け、上記第2の記憶媒体がホルダーに挿入されたときに当該第2の記憶媒体が誘導部に摺接されて一対の誘導部間に誘導されると共に誘導レバーがホルダーに対して端子電極の配列方向へ移動されて端子部の複数の接続端子が記憶媒体の複数の端子電極の配列方向へ移動され、端子部の各接続端子が第2の記憶媒体の各端子電極に係合されて接続されるようにしたので、第2の記憶媒体がホルダーに対して片寄った状態で挿入されても、何れか一方の誘導バネ部に必ず誘導されるため、接続端子と端子電極とを確実に接続することができ、また、端子部が端子電極の配列方向へ移動されるため、接続端子と端子電極との接続を確実に行うことができる。

【図面の簡単な説明】

【図1】図2乃至図37と共に本発明の実施の形態を示すものであり、本図は記憶媒体ドライブ装置に装着される第1の記憶媒体を示す拡大斜視図である。

【図2】記憶媒体ドライブ装置に装着される第2の記憶媒体を示す拡大斜視図である。

【図3】記憶媒体の電極構造を示す概念図である。

【図4】記憶媒体の内部構造及び電極構造を示す概念図である。

【図5】記憶媒体ドライブ装置と記憶媒体とのインターフェース構成を示す概念図である。

【図6】記憶媒体ドライブ装置の概略斜視図である。

【図7】記憶媒体ドライブ装置の回路構成を示すブロック図である。

【図8】ローディング機構を記憶媒体とともに示す拡大斜視図である。

【図9】誘導レバーと記憶媒体との大きさの関係を示す拡大平面図である。

【図10】ローディング機構の拡大縦断面図である。

【図11】誘導レバーのホルダーに対する回動範囲を示す拡大平面図である。

【図12】図13乃至図21と共にローディング機構の動作を示すものであり、本図は第1の記憶媒体がホルダーに挿入された直後の状態を示す拡大平面図である。

【図13】第1の記憶媒体が誘導レバーの傾斜面に摺接されている状態を示す拡大平面図である。

【図14】第1の記憶媒体が記憶媒体装着部に装着された状態を示す拡大平面図である。

【図15】第2の記憶媒体が左方に寄った状態でホルダーに挿入され誘導レバーの傾斜面に摺接されている状態を示す拡大平面図である。

【図16】図15に引き続き誘導レバーがR1方向へ回動された状態を示す拡大平面図である。

【図17】図16に引き続き第2の記憶媒体の端子電極が接続端子に接続された状態を示す拡大平面図である。

【図18】図17に引き続き誘導レバーが中立位置に戻った状態を示す拡大平面図である。

【図19】第2の記憶媒体が右方に寄った状態でホルダーに挿入され誘導レバーの傾斜面に摺接されている状態を示す拡大平面図である。

【図20】図19に引き続き誘導レバーがR2方向へ回動された状態を示す拡大平面図である。

【図21】図20に引き続き第2の記憶媒体の端子電極が接続端子に接続された状態を示す拡大平面図である。

【図22】図23乃至図27と共に第1の変形例を示すものであり、本図はローディング機構の拡大平面図である。

【図23】第1の記憶媒体が記憶媒体装着部に装着された状態を示す拡大平面図である。

【図24】第2の記憶媒体が左方に寄った状態でホルダーに挿入され誘導レバーがS1方向へ移動された状態を示す拡大平面図である。

【図25】図24に引き続き第2の記憶媒体が記憶媒体装着部に装着された状態を示す拡大平面図である。

【図26】第2の記憶媒体が右方に寄った状態でホルダーに挿入され誘導レバーがS2方向へ移動された状態を示す拡大平面図である。

【図27】図26に引き続き第2の記憶媒体が記憶媒体装着部に装着された状態を示す拡大平面図である。

【図28】図29乃至図36と共に第2の変形例を示すものであり、本図はローディング機構の拡大平面図である。

【図29】第1の記憶媒体がホルダーに挿入された直後の状態を示す拡大平面図である。

【図30】第1の記憶媒体が誘導レバーの傾斜面に摺接されている状態を示す拡大平面図である。

【図31】図30に引き続き誘導レバーが引張コイルバネのバネ力に抗してR2方向へ回動された状態を示す拡大平面図である。

【図32】図31に引き続き第1の記憶媒体が記憶媒体装着部に装着された状態を示す拡大平面図である。

【図33】第2の記憶媒体が左方に寄った状態でホルダーに挿入され誘導バネ部の左側を通過して後方へ移動されている状態を示す拡大平面図である。

【図34】図33に引き続き第2の記憶媒体が記憶媒体装着部に装着された状態を示す拡大平面図である。

【図35】第2の記憶媒体が右方に寄った状態でホルダーに挿入され誘導レバーがR2方向へ回動された状態を示す拡大平面図である。

【図36】図35に引き続き第2の記憶媒体が記憶媒体装着部に装着された状態を示す拡大平面図である。

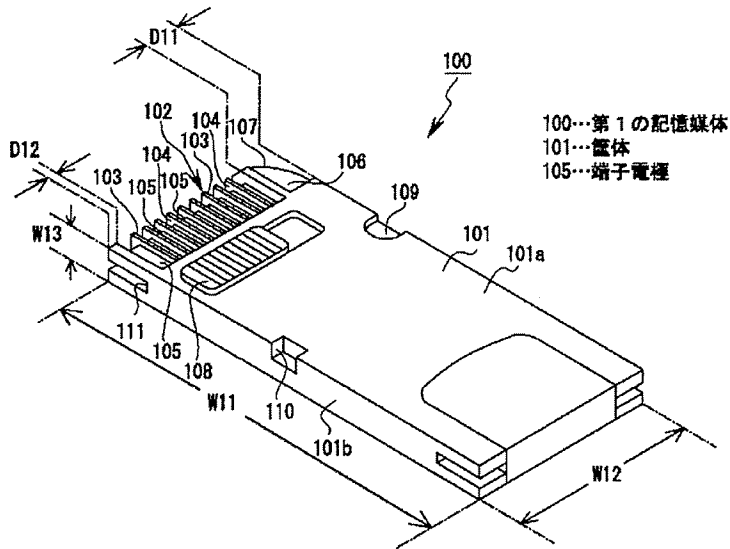
【図37】第3の変形例を示すローディング機構の拡大平面図である。

【符号の説明】

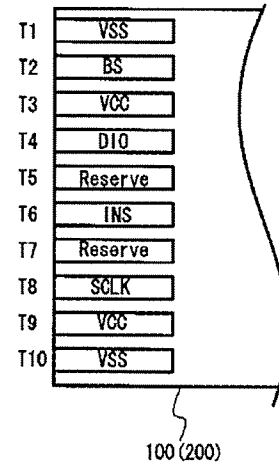
1…記憶媒体ドライブ装置、28…ホルダー、31…誘導レバー、33…誘導バネ部、34…端子部、35…接続端子、37…ローディング機構、28A…ホルダー、31A…誘導レバー、38…ローディング機構、31B…誘導レバー、40…ローディング機構、31C…誘導レバー、42…ローディング機構、100…第1の記憶媒体、101…筐体、105…端子電極、113…半導体メモリー、200…第2の記憶媒体、201…筐体、205…端子電極、213…半導体メモリー



【図1】

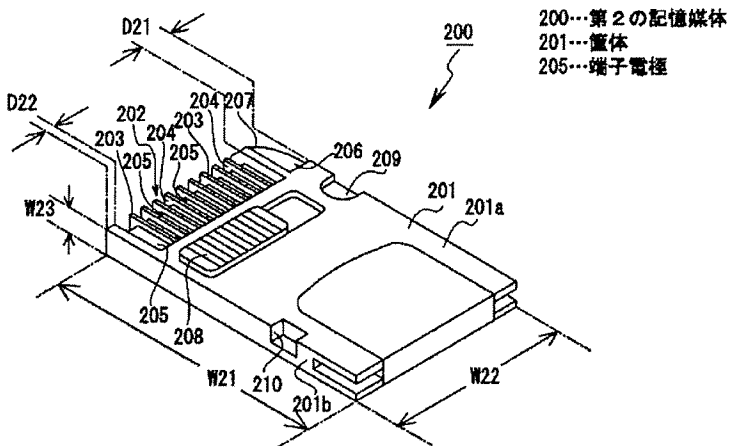


【図3】

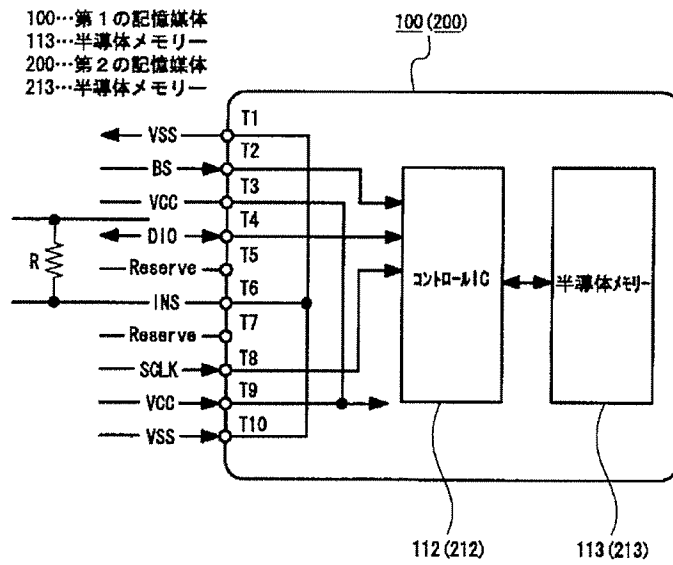


100...第1の記憶媒体  
200...第2の記憶媒体

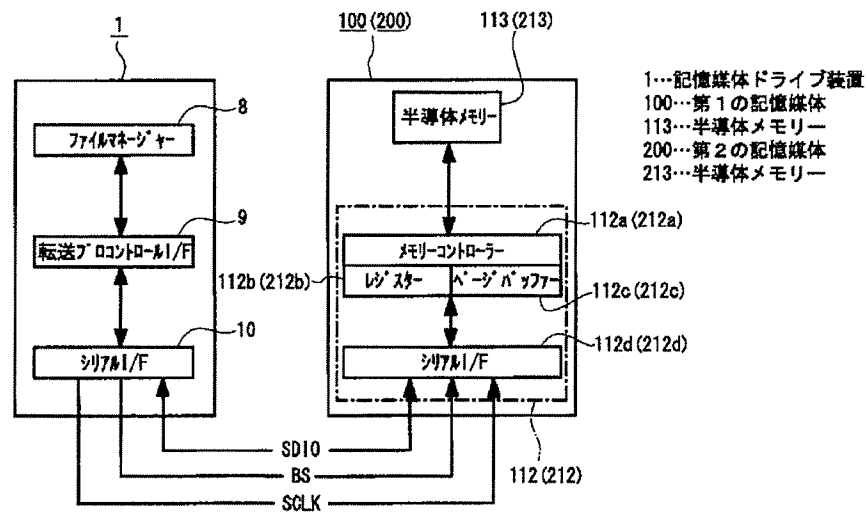
【図2】



【図4】

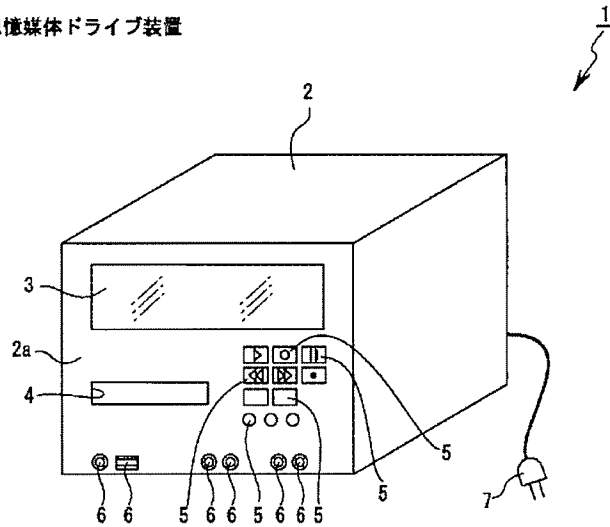


【図5】



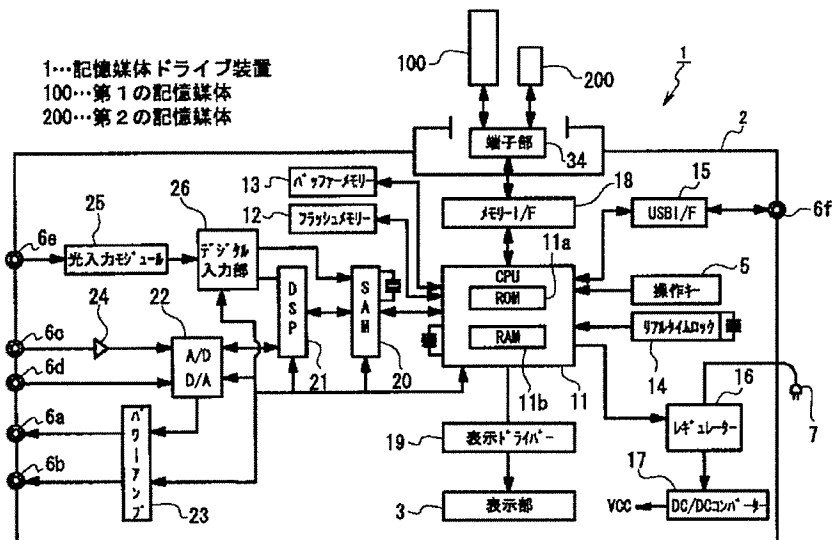
【図6】

1…記憶媒体ドライブ装置

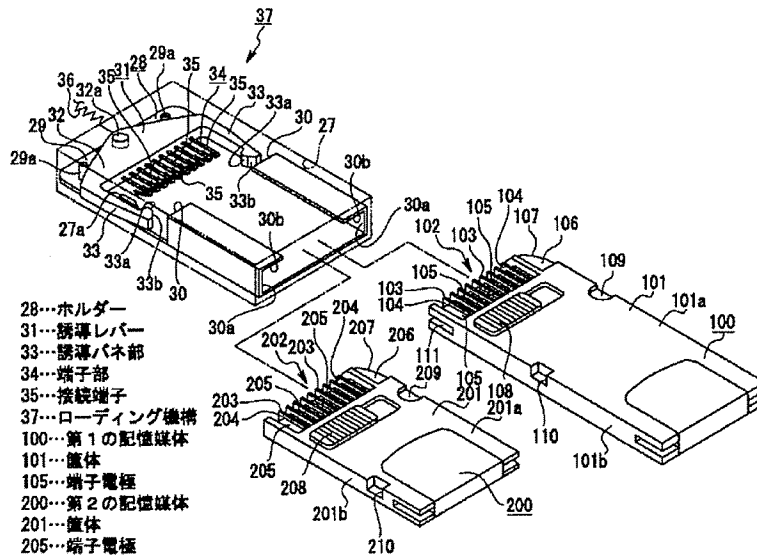


【図7】

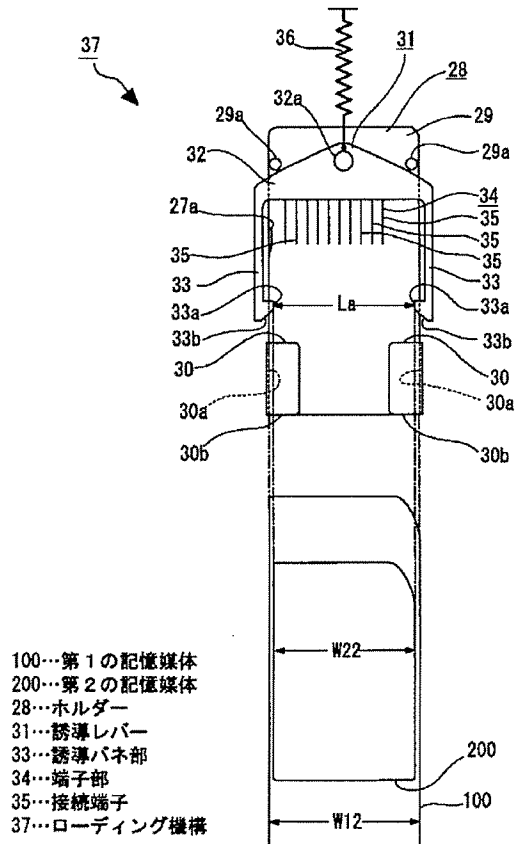
1…記憶媒体ドライブ装置  
100…第1の記憶媒体  
200…第2の記憶媒体



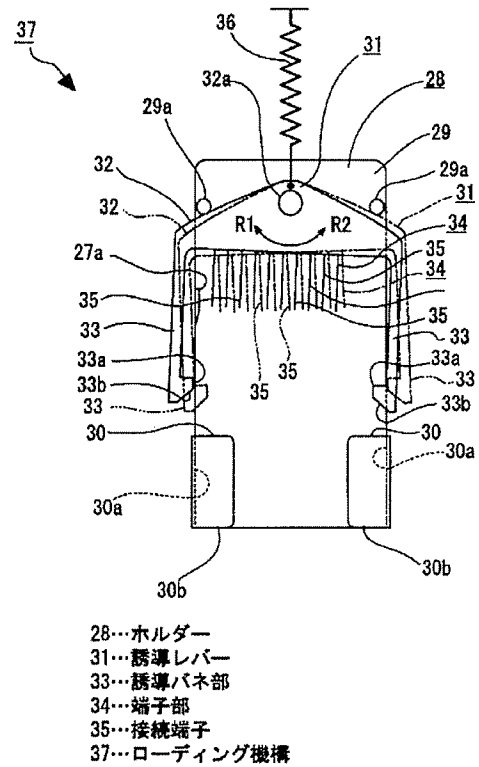
【図8】



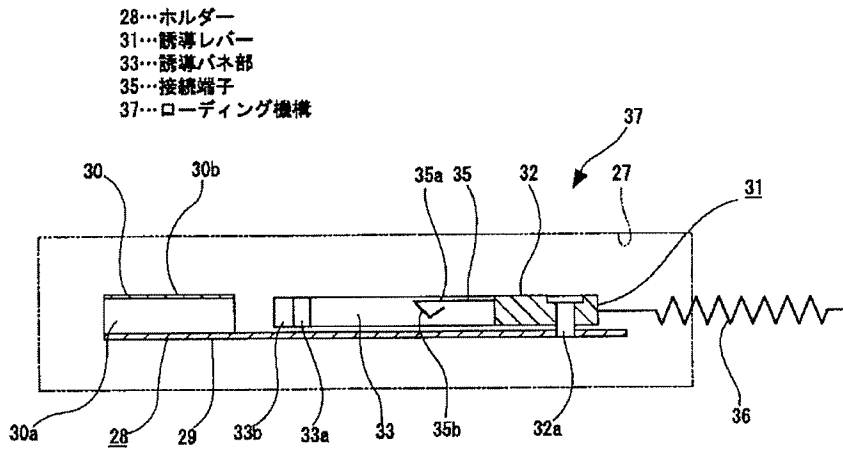
【図9】



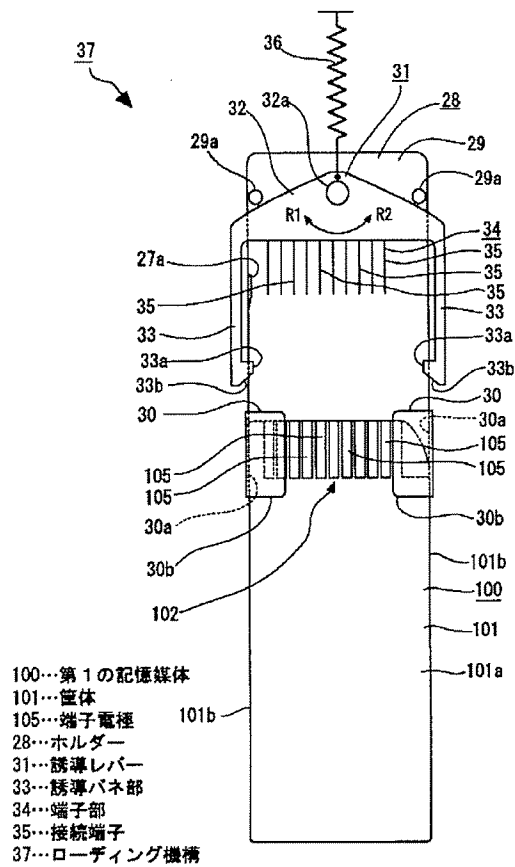
【図11】



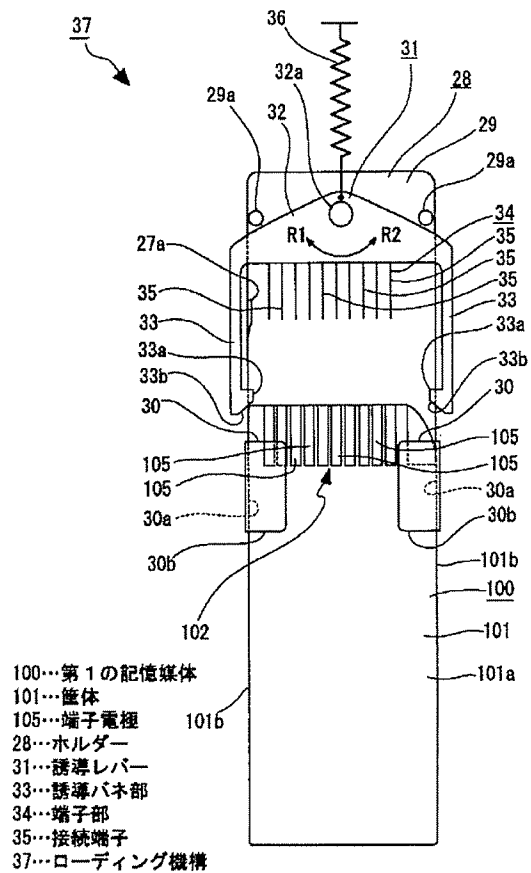
【図10】



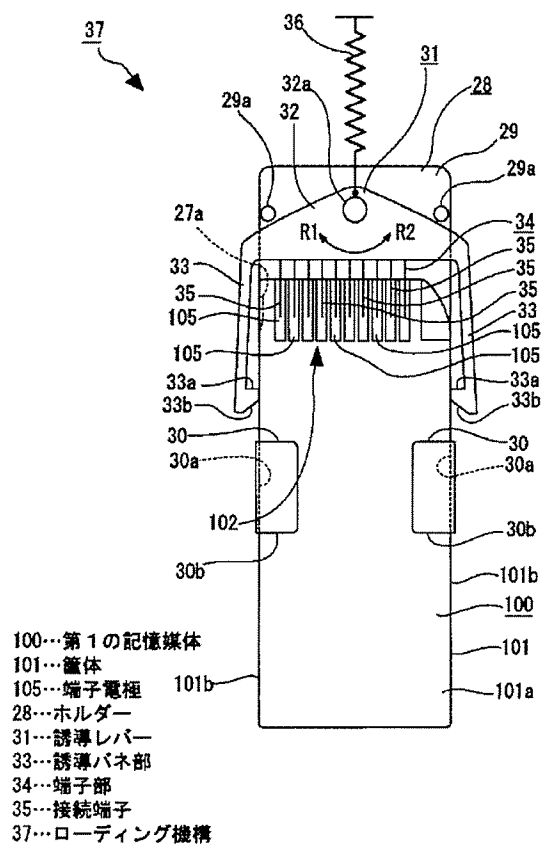
【図12】



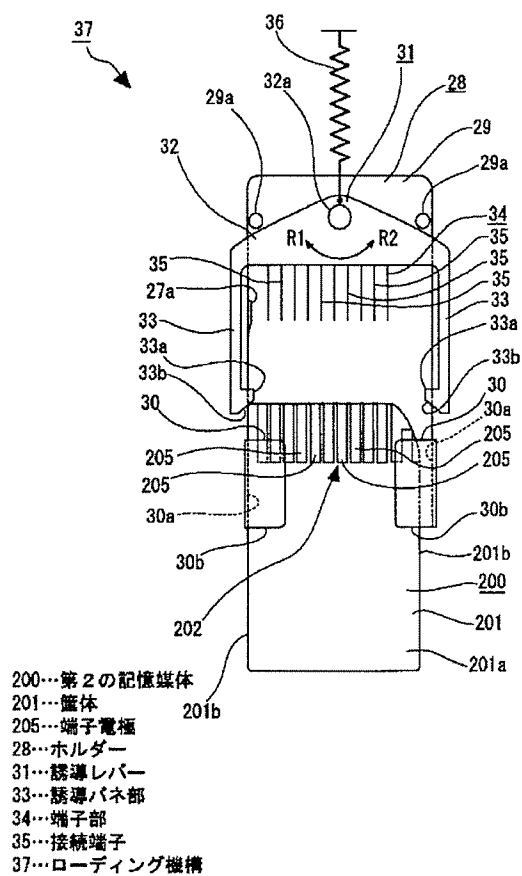
【図13】



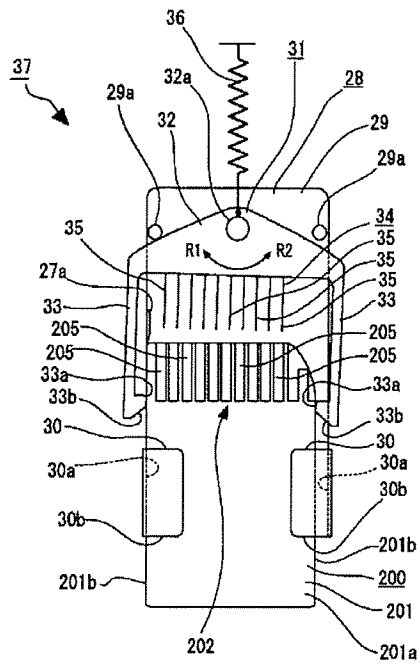
【図14】



【※15】

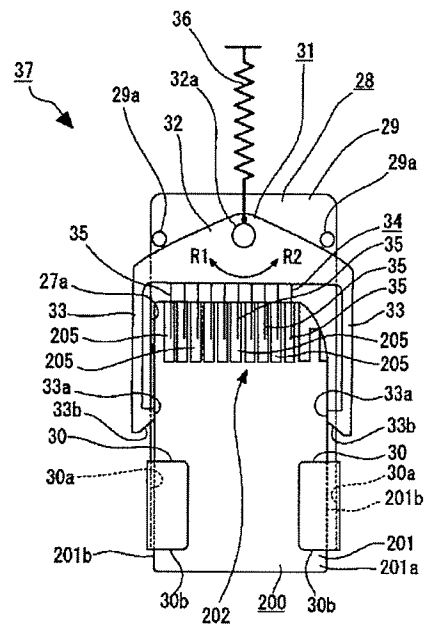


【図16】



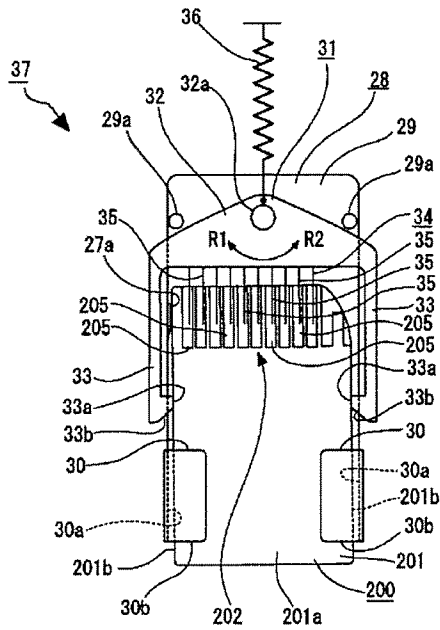
- 200…第2の記憶媒体
- 201…筐体
- 205…端子電極
- 28…ホルダー
- 31…誘導レバー
- 33…誘導バネ部
- 34…端子部
- 35…接続端子
- 37…ローディング機構

【図17】



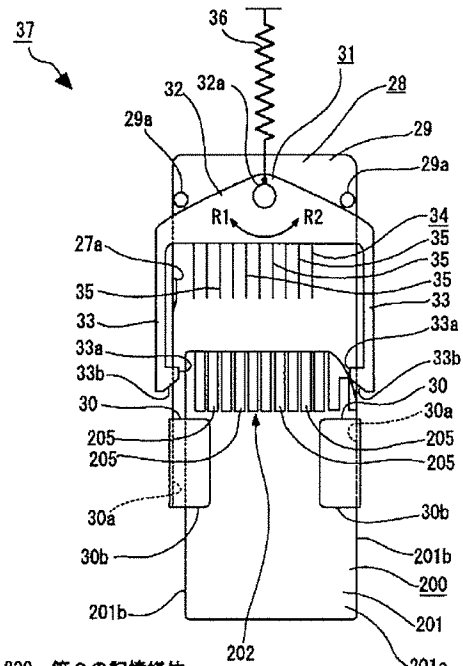
- 200…第2の記憶媒体
- 201…筐体
- 205…端子電極
- 28…ホルダー
- 31…誘導レバー
- 33…誘導バナ部
- 34…端子部
- 35…接続端子
- 37…ローディング機構

【図18】



200...第2の記憶媒体  
201...筐体  
205...端子電極  
28...ホルダー  
31...誘導レバー  
33...誘導バネ部  
34...端子部  
35...接続端子  
37...ローディング機構

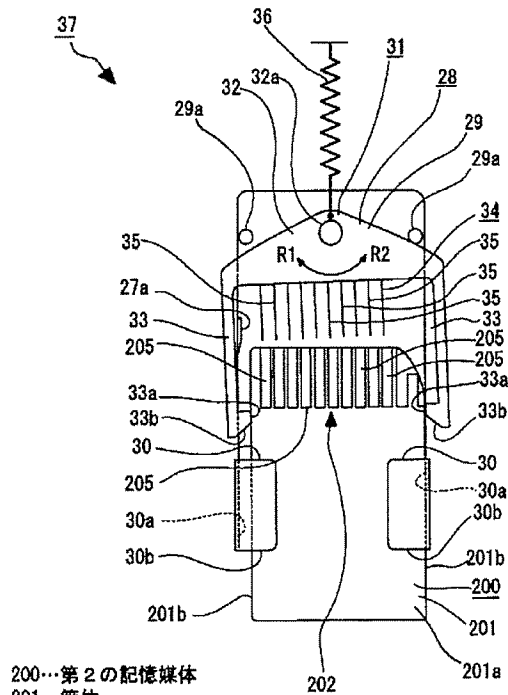
【図19】



200...第2の記憶媒体  
201...筐体  
205...端子電極  
28...ホルダー  
31...誘導レバー  
33...誘導バネ部  
34...端子部  
35...接続端子  
37...ローディング機構

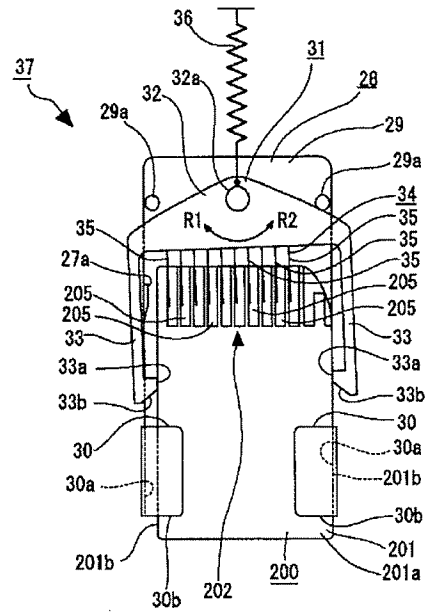


【図20】



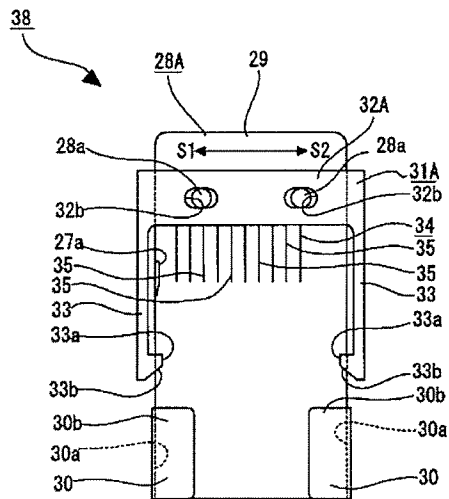
200…第2の記憶媒体  
201…筐体  
205…端子電極  
28…ホルダー  
31…誘導レバー  
33…誘導バネ部  
34…端子部  
35…接続端子  
37…ローディング機構

【図21】



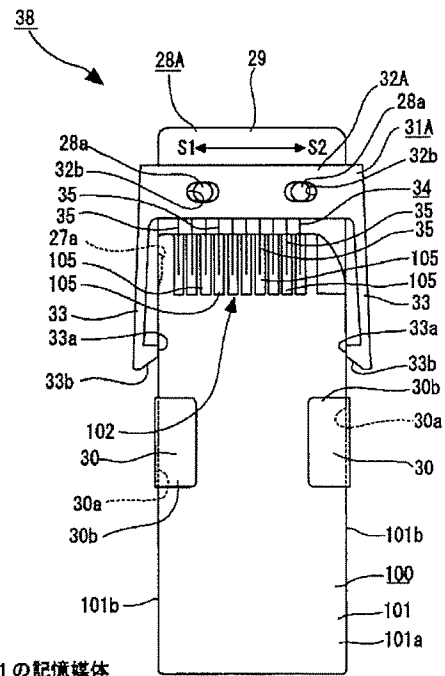
200…第2の記憶媒体  
201…筐体  
205…端子電極  
28…ホルダー  
31…誘導レバー  
33…誘導バネ部  
34…端子部  
35…接続端子  
37…ローディング機構

【図22】



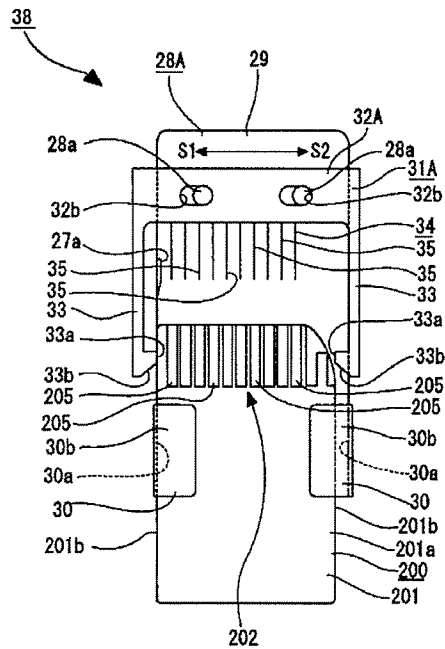
33…誘導バネ部  
 34…端子部  
 35…接続端子  
 28A…ホルダー  
 31A…誘導レバー  
 38…ローディング機構

【図23】



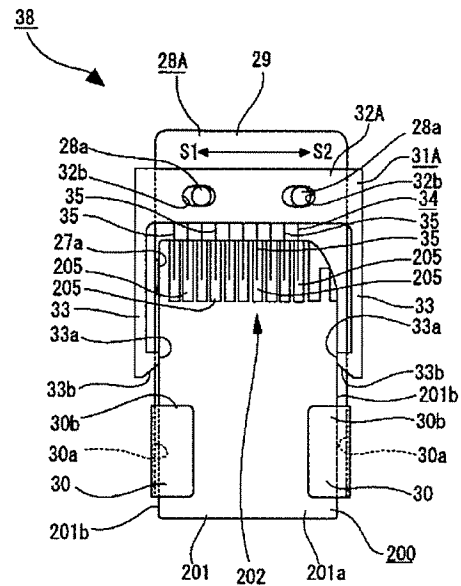
100…第1の記憶媒体  
 101…筐体  
 105…端子電極  
 33…誘導バネ部  
 34…端子部  
 35…接続端子  
 28A…ホルダー  
 31A…誘導レバー  
 38…ローディング機構

【図24】



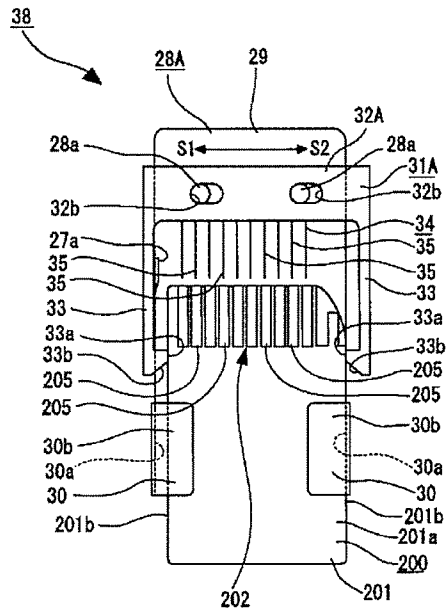
200…第2の記憶媒体  
201…筐体  
205…端子電極  
33…誘導パネ部  
34…端子部  
35…接続端子  
28A…ホルダー  
31A…誘導レバー  
38…ローディング機構

【図25】



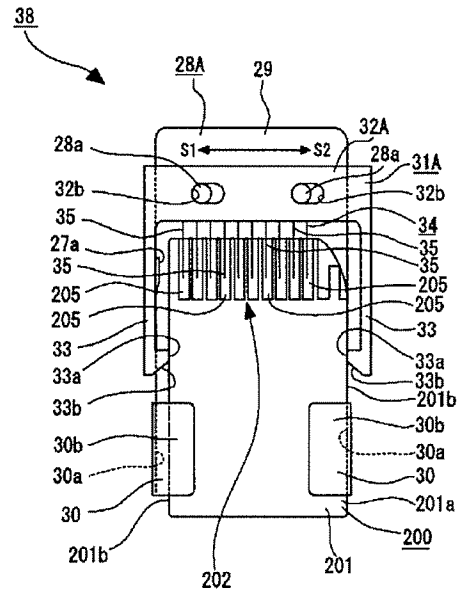
200…第2の記憶媒体  
201…筐体  
205…端子電極  
33…誘導パネ部  
34…端子部  
35…接続端子  
28A…ホルダー  
31A…誘導レバー  
38…ローディング機構

【図26】



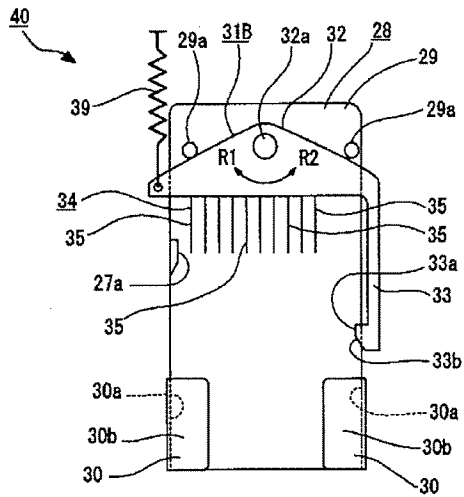
200...第2の記憶媒体  
201...筐体  
205...端子電極  
33...誘導バネ部  
34...端子部  
35...接続端子  
28A...ホルダー  
31A...誘導レバー  
38...ローディング機構

【図27】



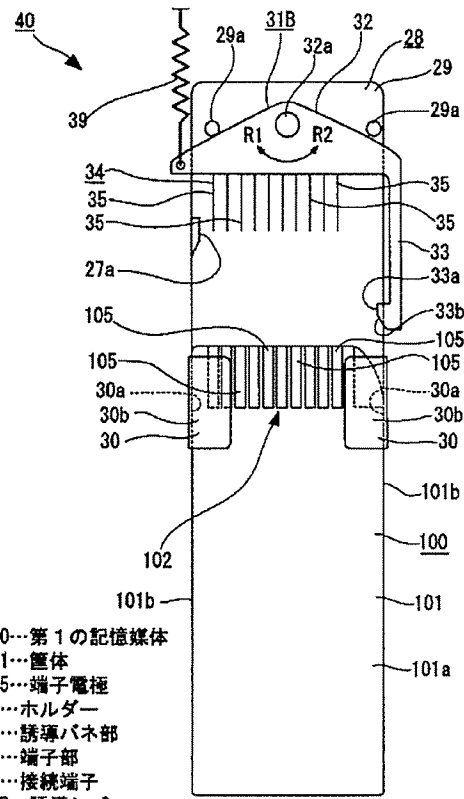
200...第2の記憶媒体  
201...筐体  
205...端子電極  
33...誘導バネ部  
34...端子部  
35...接続端子  
28A...ホルダー  
31A...誘導レバー  
38...ローディング機構

【図28】



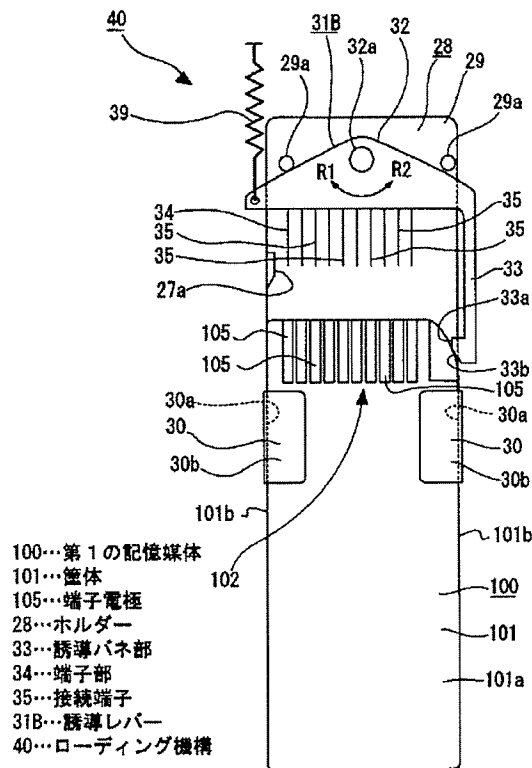
- 28…ホルダー
- 33…誘導パネ部
- 34…端子部
- 35…接続端子
- 31B…誘導レバー
- 40…ローディング機構

【図29】

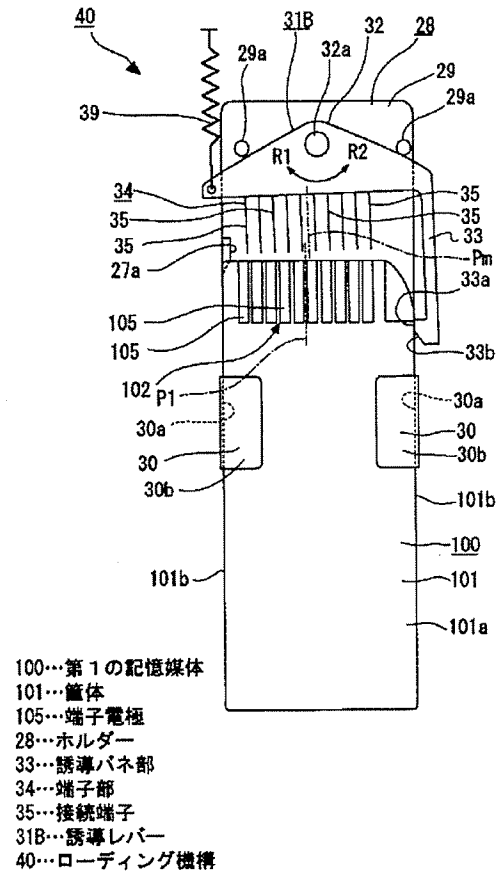


- 100…第1の記憶媒体
- 101…筐体
- 105…端子電極
- 28…ホルダー
- 33…誘導パネ部
- 34…端子部
- 35…接続端子
- 31B…誘導レバー
- 40…ローディング機構

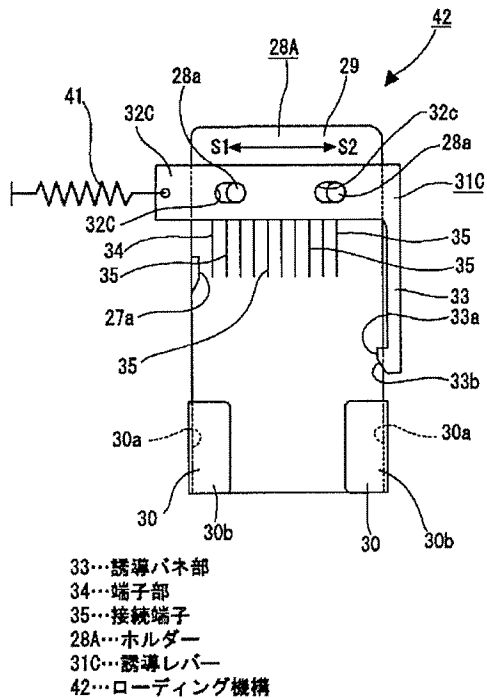
【図30】



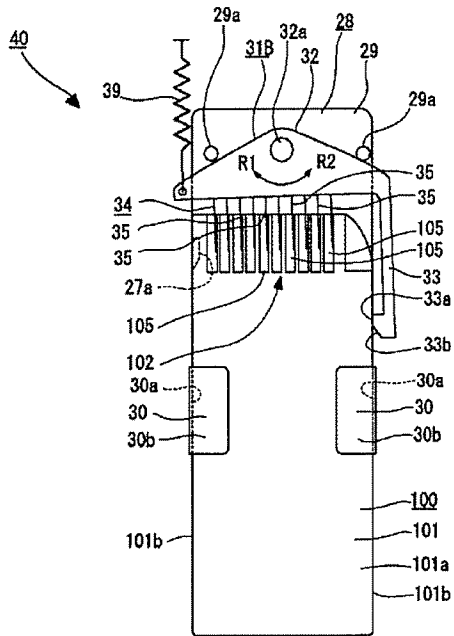
【図31】



【図37】

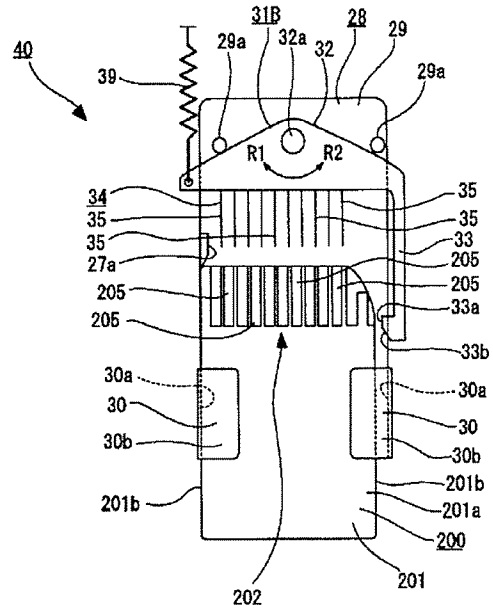


【図32】



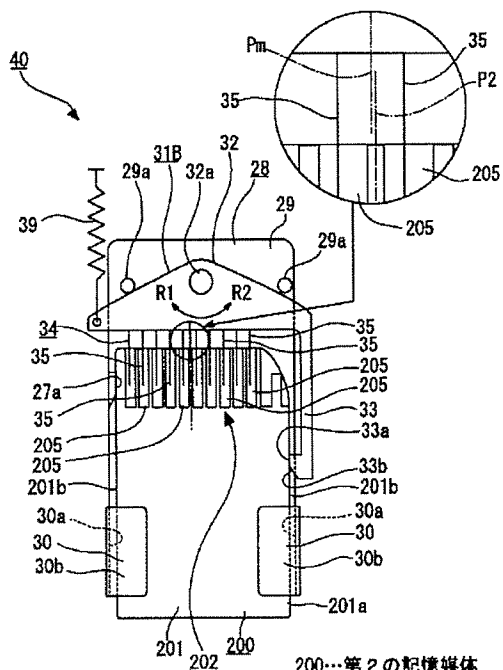
100…第1の記憶媒体  
101…筐体  
105…端子電極  
28…ホルダー  
33…誘導パネ部  
34…端子部  
35…接続端子  
31B…誘導レバー  
40…ローディング機構

【図33】



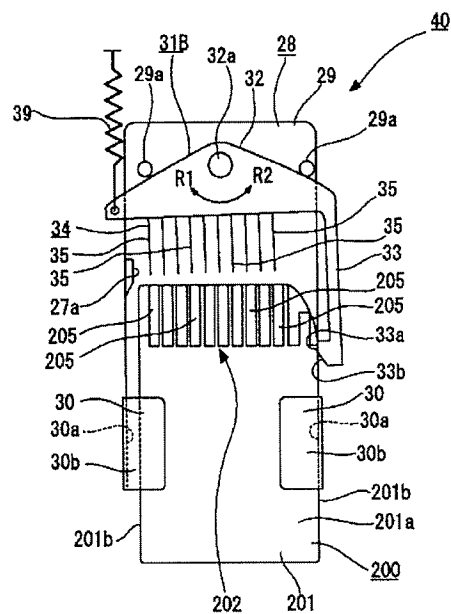
200…第2の記憶媒体  
201…筐体  
205…端子電極  
28…ホルダー  
33…誘導パネ部  
34…端子部  
35…接続端子  
31B…誘導レバー  
40…ローディング機構

【図34】



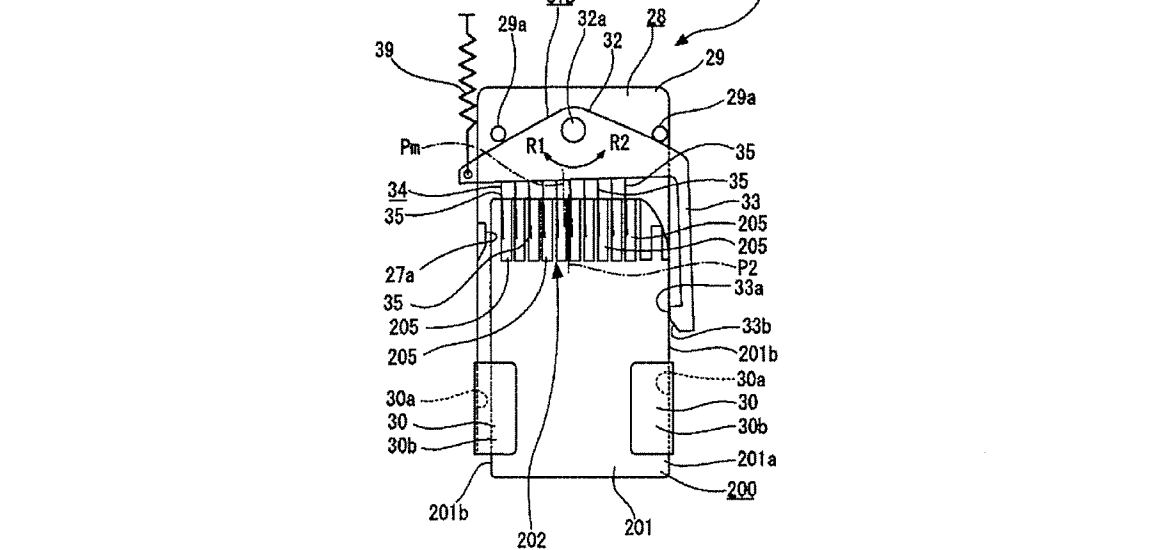
- 200...第2の記憶媒体
- 201...筐体
- 205...端子電極
- 28...ホルダー
- 33...誘導バネ部
- 34...端子部
- 35...接続端子
- 31B...誘導レバー
- 40...ローディング機構

【図35】



- 200...第2の記憶媒体
- 201...筐体
- 205...端子電極
- 28...ホルダー
- 33...誘導バネ部
- 34...端子部
- 35...接続端子
- 31B...誘導レバー
- 40...ローディング機構





200…第2の記憶媒体  
201…筐体  
205…端子電極  
28…ホルダー  
33…誘導パネ部  
34…端子部  
35…接続端子  
31B…誘導レバー  
40…ローディング機構

フロントページの続き

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5E021 FA05 FB18 FC31 HA05 HB07  
HB11 HC12 HC31  
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EE07 EE21 HH08 HH17 HH28  
HH30